

# HST-49A/49AB

HST-49A : Silver Type

AEP Model

UK Model

E Model

HST-49AB : Black Type

AEP Model



(HST-49A)

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## STEREO CASSETTE-RECEIVER

### SPECIFICATIONS

#### GENERAL

- System:** Superheterodyne FM/AM tuner, Complementary symmetry power amplifier circuit (SEPP OTL, OCL)
- Power Requirements:** 220 V ac, 50 Hz (AEP model)  
110-120 or 220-240 V ac adjustable, 50/60 Hz (E model)  
240 V ac, 50 Hz (UK model)
- Power Consumption:** 105 W
- Dimensions:** Approx. 456 (w) x 225 (h) x 247 (d) mm  
18 (w) x 8 <sup>7</sup>/<sub>8</sub> (h) x 9 <sup>3</sup>/<sub>4</sub> (d) inches including projecting parts and controls
- Weight:** Approx. 6.9 kg (15 lb 3 oz) net  
Approx. 8.1 kg (17 lb 9 oz) in shipping

#### FM SECTION

- Tuning Range:** 87.5-108 MHz
- Antenna:** 300  $\Omega$  balanced  
75  $\Omega$  unbalanced
- Usable Sensitivity:** 12 dBf, 2.2  $\mu$ V, S/N = 30 dB

- Harmonic Distortion:** 0.5% (MONO), 1.0% (STEREO) at 400 Hz
- Selectivity:** 50 dB
- S/N Ratio:** 65 dB
- Frequency Response:** 70 Hz - 12.5 kHz  $\pm$  3 dB
- Separation:** Better than 35 dB

— Continued on page 2 —

| Tape Transport Mechanism Type | TCM-11VS25                                |                                          |
|-------------------------------|-------------------------------------------|------------------------------------------|
|                               | Specifications                            | Test Equipment                           |
| Forward Torque                | 25 - 60 g·cm<br>(0.35 - 0.84 oz·inch)     | Sony torque meter<br>CQ-101A, 102A, 103A |
| Fast Forward Torque           | 60 - 110 g·cm<br>(0.84 - 1.53 oz·inch)    | Sony torque meter<br>CQ-201A             |
| Rewind Torque                 | 60 - 110 g·inch)<br>(0.84 - 1.53 oz·inch) | Sony torque meter<br>CQ-201A             |
| Pinch Roller Pressure         | 310 - 400 g<br>(11 - 14.1 oz)             | spring scale or<br>tension gauge         |

#### SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK  ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

# SONY®

## SERVICE MANUAL

# HST-49A/49AB

## AM SECTION

### AEP, UK model

| Band                   | SW                                            | MW                                                                          | LW                                                         |
|------------------------|-----------------------------------------------|-----------------------------------------------------------------------------|------------------------------------------------------------|
| Tuning Range           | 5.8–15.8 MHz<br>(49–19 m)                     | 530–1,605 kHz                                                               | 150–350 kHz                                                |
| Antenna                | External antenna terminal                     | Built-in ferrite-rod antenna and external antenna terminal                  |                                                            |
| Sensitivity            | 30 $\mu$ V, external antenna<br>(S/N = 20 dB) | 50 dB/m, built-in antenna<br>100 $\mu$ V, external antenna<br>(S/N = 20 dB) | 52 dB/m, built-in antenna<br>150 $\mu$ V, external antenna |
| S/N Ratio              | 50 dB                                         |                                                                             |                                                            |
| Harmonic Distortion    | 0.8 % at 400 Hz                               |                                                                             |                                                            |
| Intermediate Frequency | 468 kHz                                       |                                                                             |                                                            |

### E model

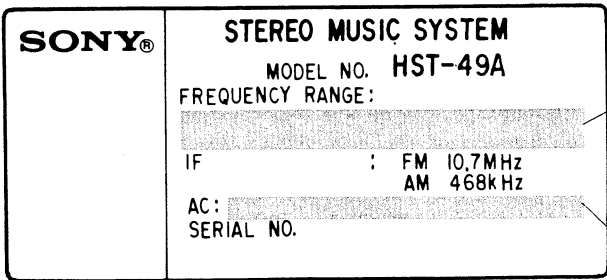
| Band                   | SW1                                           | SW2                     | MW                                                         |
|------------------------|-----------------------------------------------|-------------------------|------------------------------------------------------------|
| Tuning Range           | 2.3–6.2 MHz<br>(120–49 m)                     | 7–17.9 MHz<br>(41–16 m) | 530–1,605 kHz                                              |
| Antenna                | External antenna terminal                     |                         | Built-in ferrite-rod antenna and external antenna terminal |
| Sensitivity            | 30 $\mu$ V, external antenna<br>(S/N = 20 dB) |                         | 50 dB/m, built-in antenna<br>100 $\mu$ V, external antenna |
| S/N Ratio              | 50 dB                                         |                         |                                                            |
| Harmonic Distortion    | 0.8 % at 400 Hz                               |                         |                                                            |
| Intermediate Frequency | 468 kHz                                       |                         |                                                            |

## AMPLIFIER SECTION

|                                     |                                                 |
|-------------------------------------|-------------------------------------------------|
| <b>Continuous RMS Power Output:</b> | 20 + 20 W (THD 2%, 8 $\Omega$ ) (AEP, UK model) |
|                                     | 22 + 22 W (THD 5%, 8 $\Omega$ ) (E model)       |
| <b>Music Power:</b>                 | 65 W (THD 2%, 8 $\Omega$ ) (AEP, UK model)      |
|                                     | 70 W (THD 5%, 8 $\Omega$ ) (E model)            |
| <b>Peak Music Power Inputs:</b>     | 130 W (AEP, UK model)                           |
|                                     | 140 W (E model)                                 |

## MODEL IDENTIFICATION

— Rear Board —



## FREQUENCY RANGE

| AEP, UK model     | E model            |
|-------------------|--------------------|
| FM 87.5 – 108 MHz | FM 87.5 – 108 MHz  |
| MW 530 – 1605 kHz | MW 530 – 1605 kHz  |
| LW 150 – 350 kHz  | SW1 2.3 – 6.2 MHz  |
| SW 5.8 – 15.8 MHz | SW2 7.0 – 17.9 MHz |

| AEP model              | E model                                   |
|------------------------|-------------------------------------------|
| 220 V ~<br>50 Hz 105 W | 110 – 120 V/220 – 240 V<br>50/60 Hz 105 W |
| UK model               |                                           |
| 240 V ~<br>50 Hz 105 W |                                           |

## Inputs:

|                     | sensitivity        | impedance     | S/N   |
|---------------------|--------------------|---------------|-------|
| PHONO (phono jacks) | 3.5 mV<br>(–47 dB) | 47 k $\Omega$ | 65 dB |
| AUX (phono jacks)   | 350 mV<br>(–7 dB)  | 47 k $\Omega$ | 70 dB |
| MIC (phono jacks)   | 1 mV<br>(–57 dB)   | 600 $\Omega$  | 60 dB |

## Outputs:

|                          |                                          |                            |
|--------------------------|------------------------------------------|----------------------------|
| REC OUT<br>(phono jacks) | output voltage<br>250 mV<br>(–10 dB)     | impedance<br>10 k $\Omega$ |
| HEADPHONES               | Accepts headphones of 8 $\Omega$ or more |                            |
| SPEAKERS                 | Accepts speakers of 8 $\Omega$           |                            |

**Frequency Response:** PHONO: RIAA curve  $\pm 2$  dB  
AUX: 30 Hz – 30 kHz  $\pm 3$  dB

**Tone Controls:** BASS:  $\pm 10$  dB at 100 Hz  
TREBLE:  $\pm 10$  dB at 10 kHz

**Loudness Control** (att. 30 dB): +7 dB at 100 Hz  
+4 dB at 10 kHz

## CASSETTE RECORDER SECTION

**Recording System:** 4-track 2-channel stereo

**Frequency Response:** DOLBY NR OFF  
With Type III cassette (Sony FeCr)  
40 – 15,000 Hz  
With Type II cassette (Sony CD- $\alpha$ )  
40 – 15,000 Hz  
With Type I cassette (Sony BHF)  
50 – 12,500 Hz

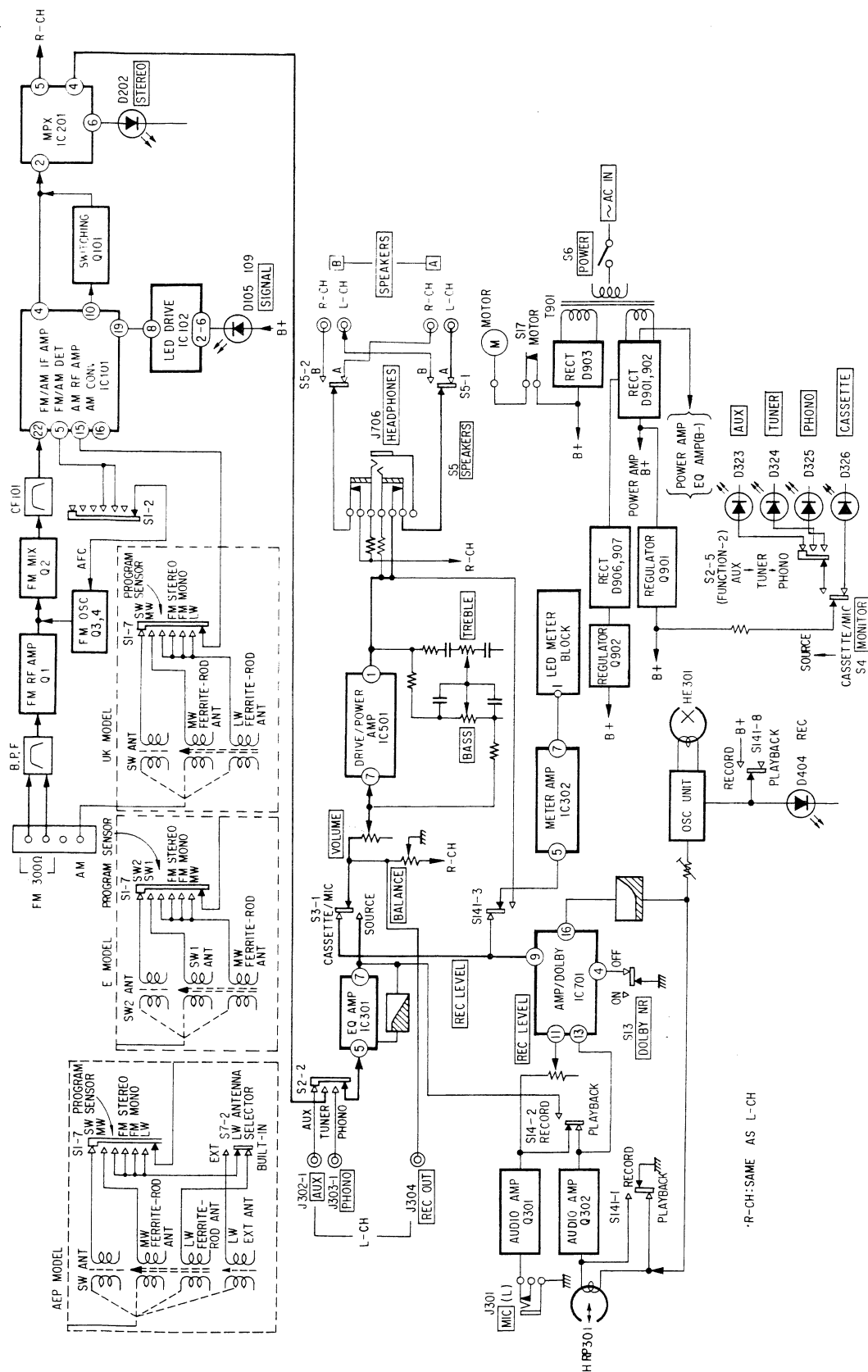
**S/N Ratio:** DOLBY NR OFF  
With Type III cassette (Sony FeCr)  
50 dB at peak level  
DOLBY NR ON  
Improved by 5 dB at 1 kHz  
10 dB above 5 kHz

**Wow and Flutter:** 0.18 % WRMS

0 dB = 0.775 V

SECTION 1  
OUTLINE

## 1-1. BLOCK DIAGRAM



\*R-CH: SAME AS L-CH

## SECTION 2 DISASSEMBLY

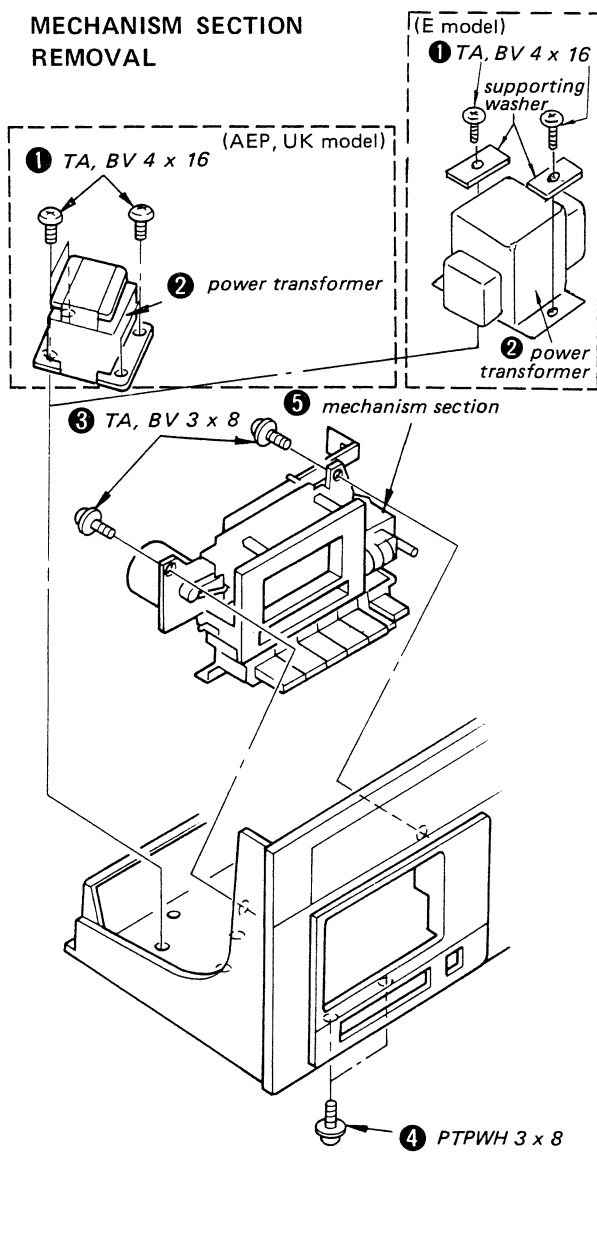
- Follow the disassembly procedure in the numerical order given.

Remove the case.  
BTP 4 x 25 (four screws)

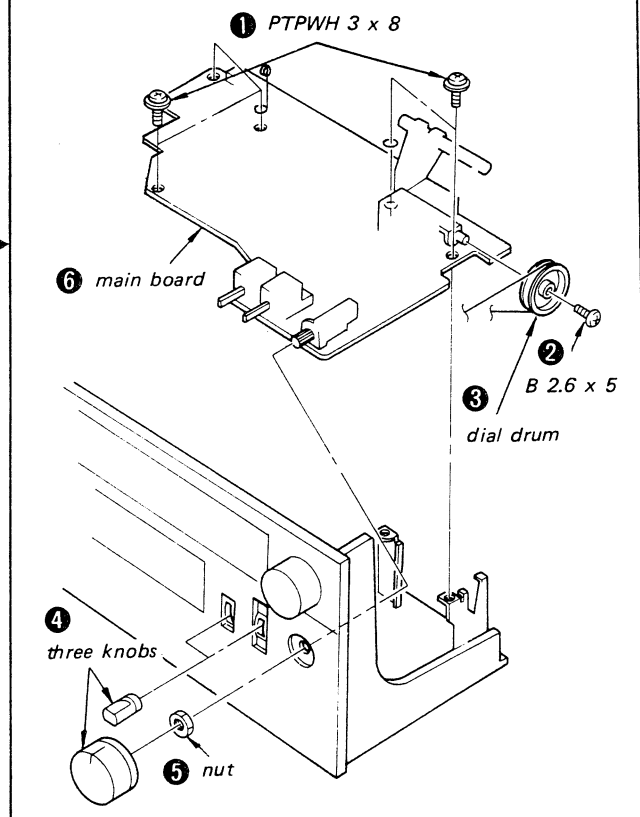
Remove the rear board.  
PTPWH 3 x 8 (one screw)

**DIAL CORD STRINGING**  
See page 6.

### MECHANISM SECTION REMOVAL



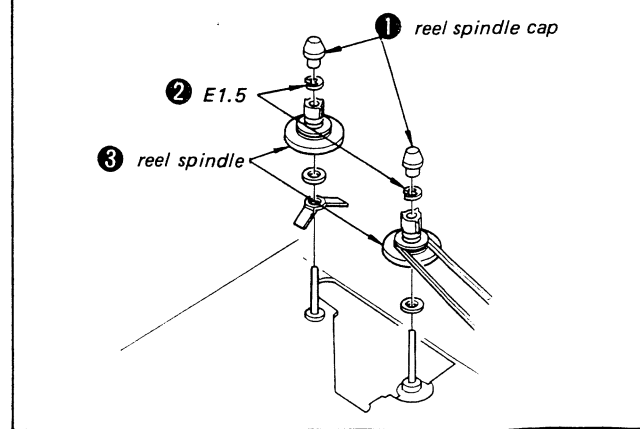
### MAIN BOARD REMOVAL



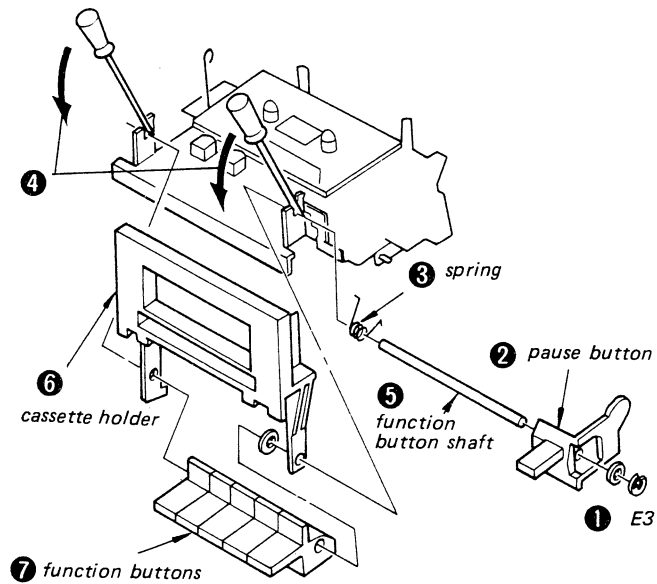
Remove the power amp board.

Remove the cassette deck cover.  
TA, P2.6 x 10 (two screws)

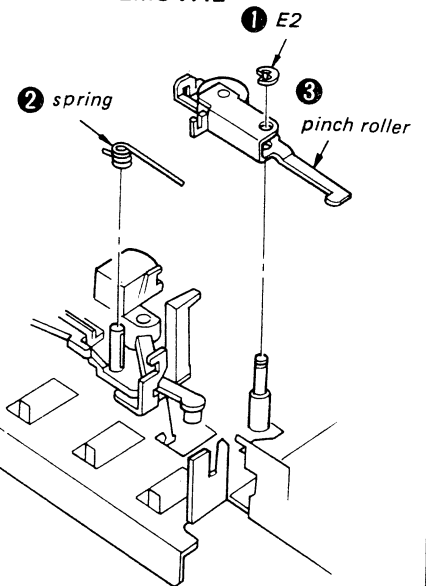
### REEL SPINDLE REMOVAL



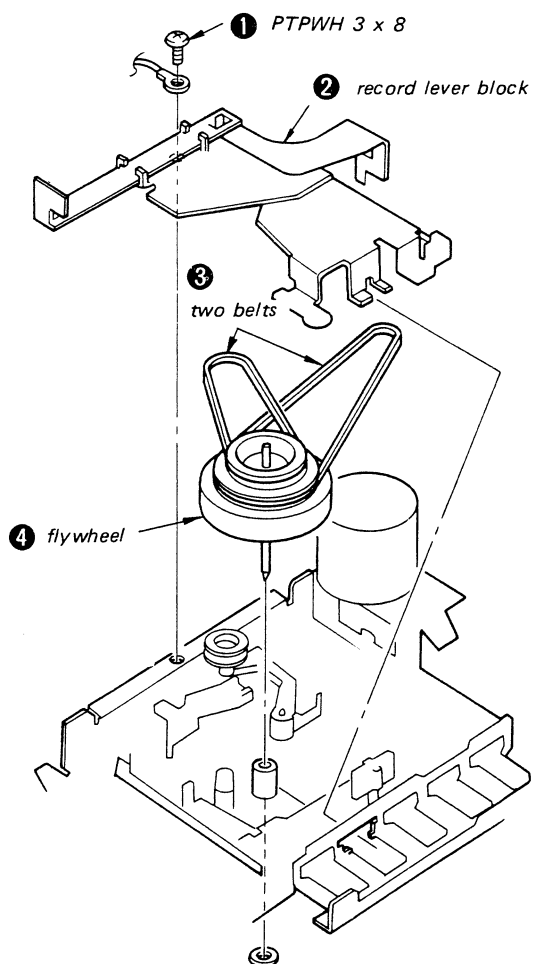
## CASSETTE HOLDER REMOVAL



## PINCH ROLLER REMOVAL

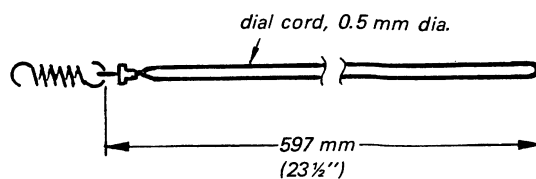


## FLYWHEEL REMOVAL



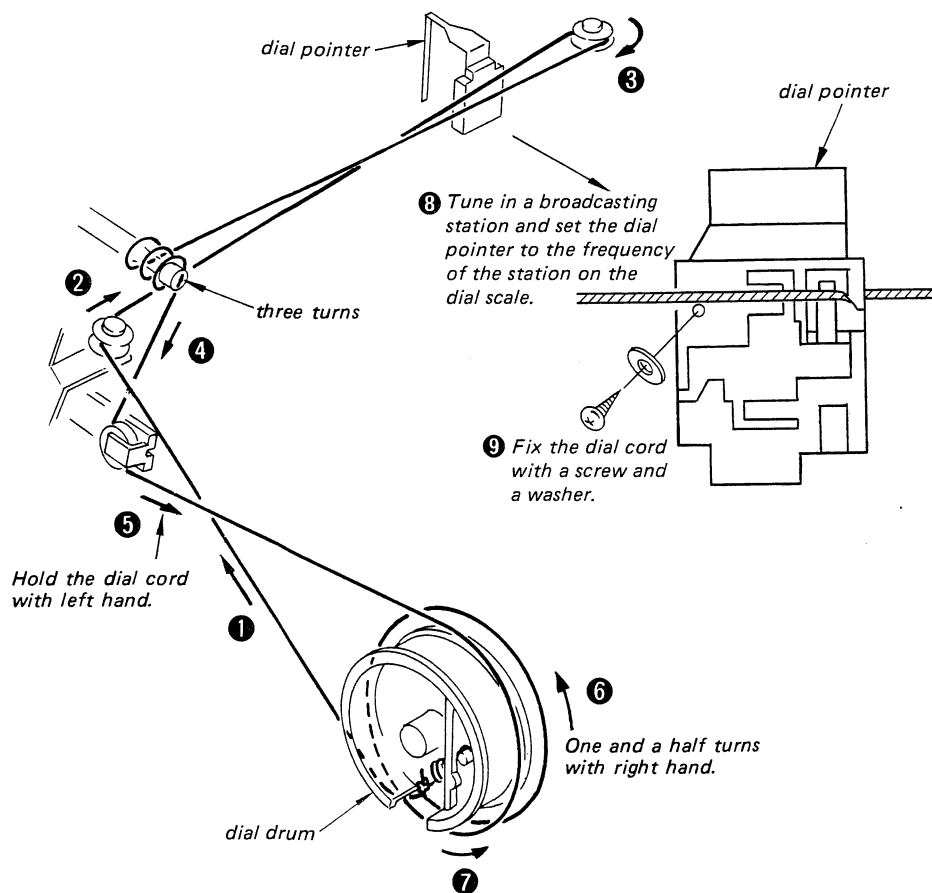
## DIAL CORD STRINGING

### 1. Preparation



### 2. Stringing and Dial Pointer Setting

- Set the shaft of the tuning capacitor to fully clockwise position and install the dial drum as shown below.



## SECTION 3

### ADJUSTMENTS

#### 3-1. MECHANICAL ADJUSTMENT

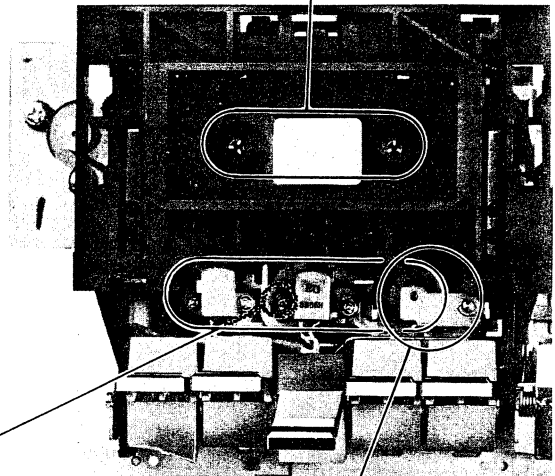
##### PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:
 

|                      |              |
|----------------------|--------------|
| record/playback head | pinch roller |
| erase head           | rubber belts |
| capstan              | idlers       |
2. Demagnetize the record/playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply a suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

##### Torque Measurement

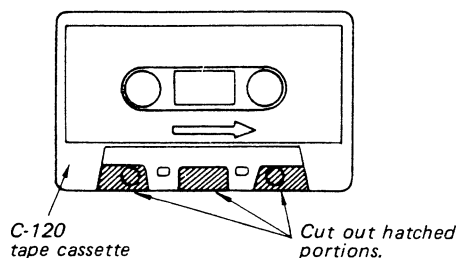
|                        | Torque meter        | Meter reading                          |
|------------------------|---------------------|----------------------------------------|
| Forward                | CQ-101A, 102A, 103A | 25 – 60 g·cm<br>(0.35 – 0.84 oz·inch)  |
| Fast Forward<br>Rewind | CQ-201A             | 60 – 110 g·cm<br>(0.84 – 1.53 oz·inch) |



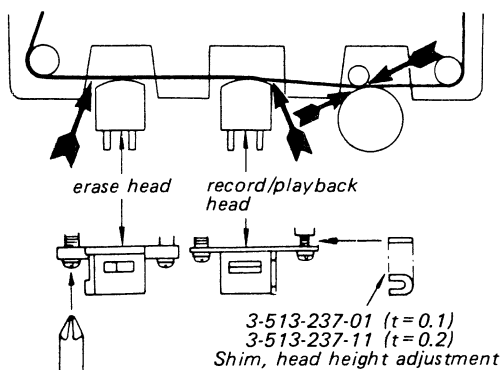
##### Head Height Adjustment

###### — Playback Mode —

1. Prepare an adjustment cassette as shown below.



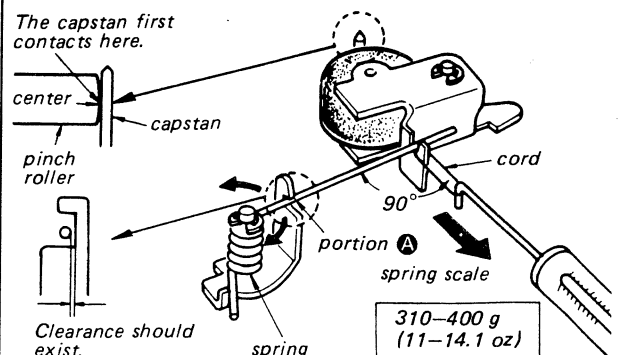
2. In playback mode and viewing from the front, adjust the head heights to eliminate tape curl and tape twist at arrowed portions.



##### Pinch Roller Pressure Adjustment

###### — Playback Mode —

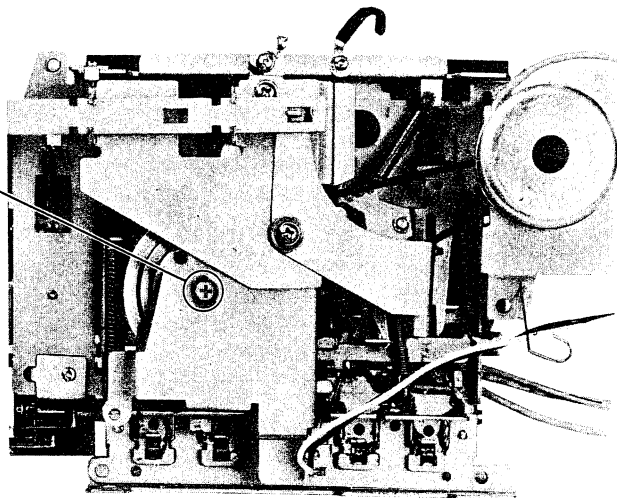
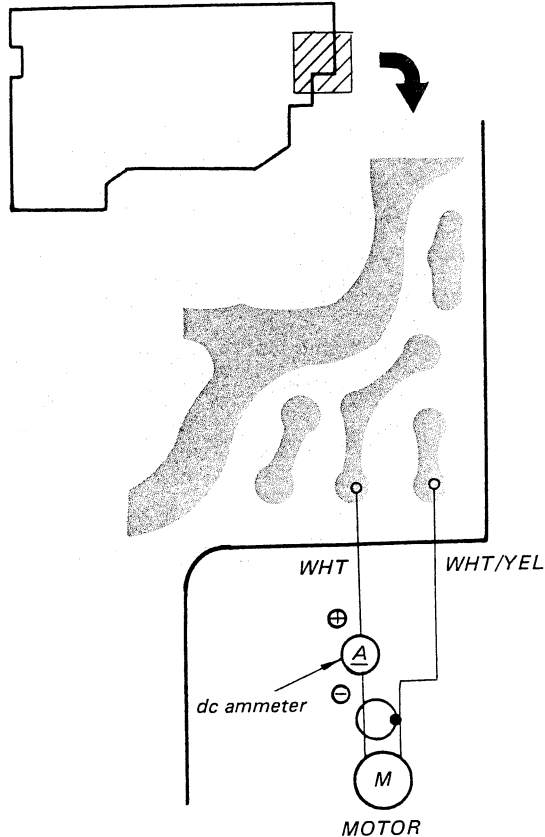
1. Pull the spring scale.
2. Slowly return the pinch roller and read the spring scale just when the pinch roller starts to rotate.
3. If necessary, bend the portion A.



## Flywheel Thrust Play Adjustment

— Playback Mode —

TUNER & CASSETTE BOARD



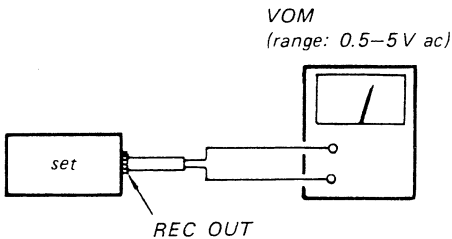
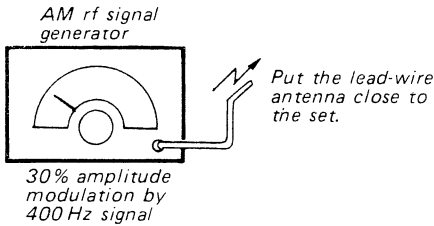
1. Disconnect a lead wire (white) of the motor and connect the dc ammeter as shown above.
2. Turn the thrust screw counterclockwise until the screw tip is detached from the flywheel shaft.
3. Gradually turn the thrust screw clockwise to the position where the motor current suddenly increases.
4. Then, turn the thrust screw counterclockwise about  $\frac{1}{4}$  turn from the position obtained in step 3.

3-2. ELECTRICAL ADJUSTMENTS – TUNER SECTION –

AEP, UK model

MW SECTION

Setting: FUNCTION (2) switch: TUNER  
FUNCTION (1) switch: MW



- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

| AM IF ALIGNMENT                    |  |
|------------------------------------|--|
| Adjust for maximum reading on VOM. |  |
| 468 kHz                            |  |
| CFU101                             |  |

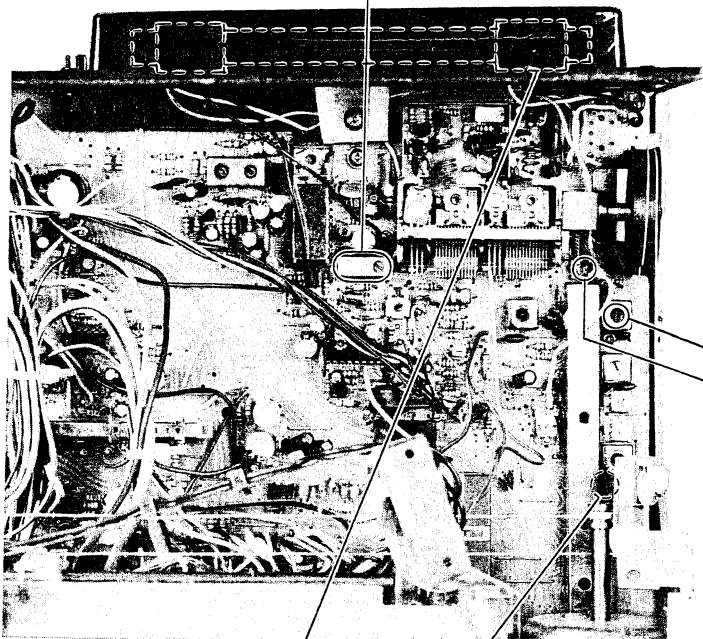


Photo : UK model

| MW FREQUENCY COVERAGE ADJUSTMENT    |          |
|-------------------------------------|----------|
| Adjust for maximum reading on VOM . |          |
| L52                                 | 520 kHz  |
| CT52                                | 1680 kHz |

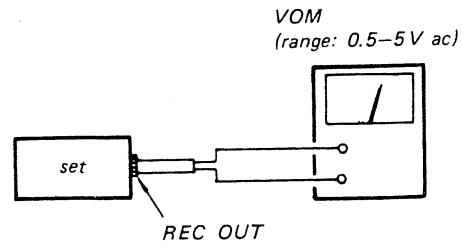
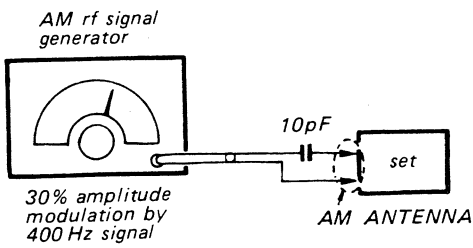
| L55                                | CT55     |
|------------------------------------|----------|
| 620 kHz                            | 1400 kHz |
| Adjust for maximum reading on VOM. |          |
| MW TRACKING ADJUSTMENT             |          |

# HST-49A/49AB

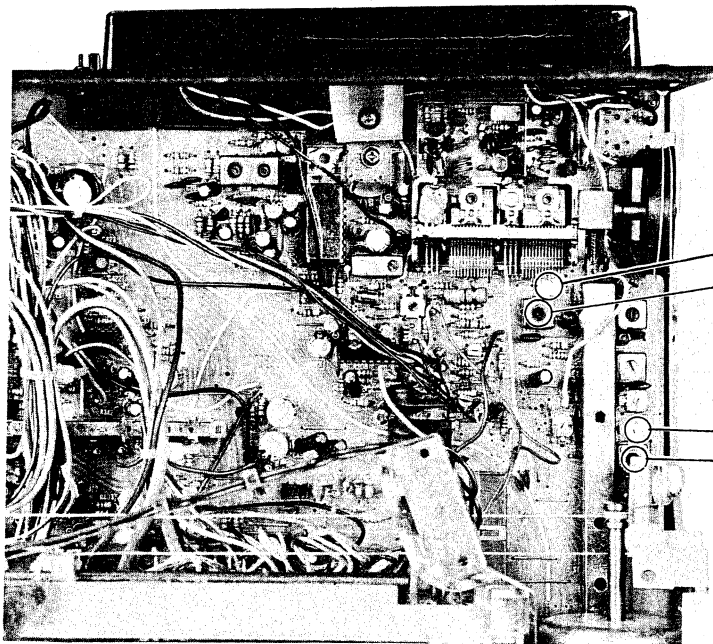
AEP, UK model

## SW SECTION

Setting: FUNCTION (2) switch: TUNER  
FUNCTION (1) switch: SW



- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.



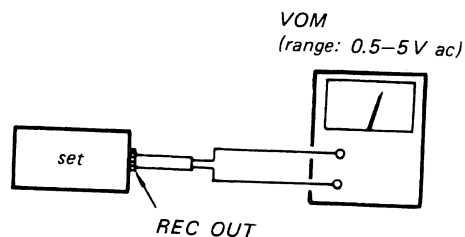
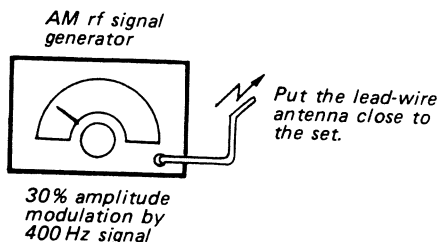
| SW FREQUENCY COVERAGE ADJUSTMENT     |          |
|--------------------------------------|----------|
| Adjust for a maximum reading on VOM. |          |
| CT53                                 | 16.1 MHz |
| L53                                  | 5.5 MHz  |

| SW TRACKING ADJUSTMENT               |          |
|--------------------------------------|----------|
| Adjust for a maximum reading on VOM. |          |
| CT56                                 | 16.1 MHz |
| L56                                  | 5.5 MHz  |

## AEP, UK model

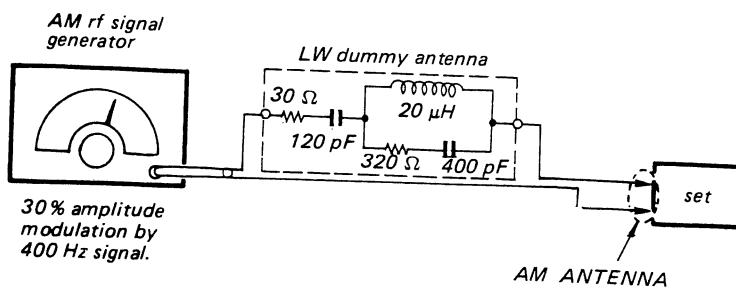
### LW SECTION

Setting: FUNCTION (2) switch: TUNER  
 FUNCTION (1) switch: LW  
 LW ANTENNA SELECTOR: BUILT-IN or EXT  
 (AEP model)



- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

### • LW TRACKING ② ADJUSTMENT (AEP model)



- Perform the LW TRACKING ADJUSTMENT in the numerical order given.

### LW TRACKING ① ADJUSTMENT

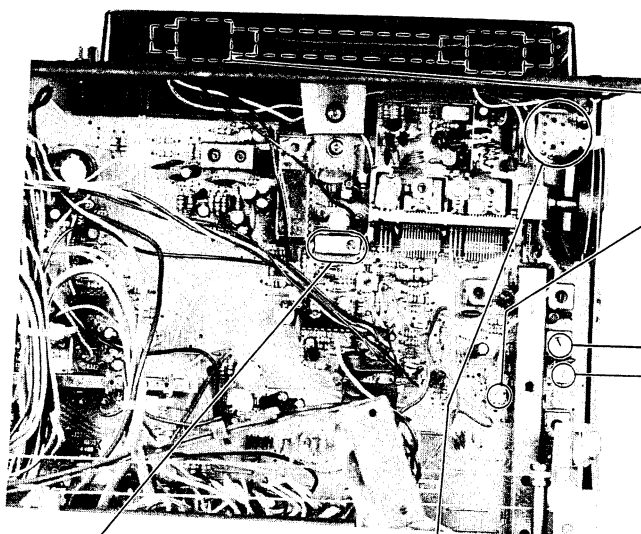
LW ANTENNA SELECTOR switch (S7) : BUILT-IN  
 Adjust for a maximum reading on VOM

|      |         |
|------|---------|
| L54  | 170 kHz |
| CT54 | 310 kHz |

### LW FREQUENCY COVERAGE ADJUSTMENT

Adjust for a maximum reading on VOM.

|      |         |
|------|---------|
| L51  | 145 kHz |
| CT51 | 365 kHz |



|                                      |
|--------------------------------------|
| CFU101                               |
| 468 kHz                              |
| Adjust for a maximum reading on VOM. |
| AM IF ALIGNMENT                      |

|                                       |
|---------------------------------------|
| L57                                   |
| 240 kHz                               |
| LW ANTENNA SELECTOR switch (S7) : EXT |
| Adjust for a maximum reading on VOM.  |
| LW TRACKING ② ADJUSTMENT              |

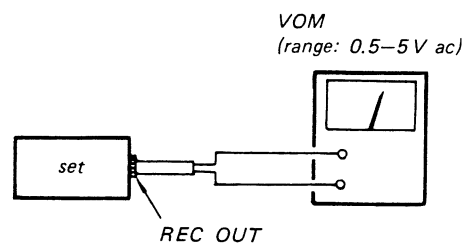
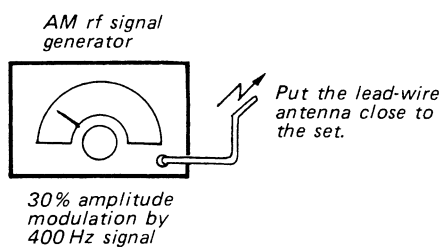
- AEP model

# HST-49A/49AB

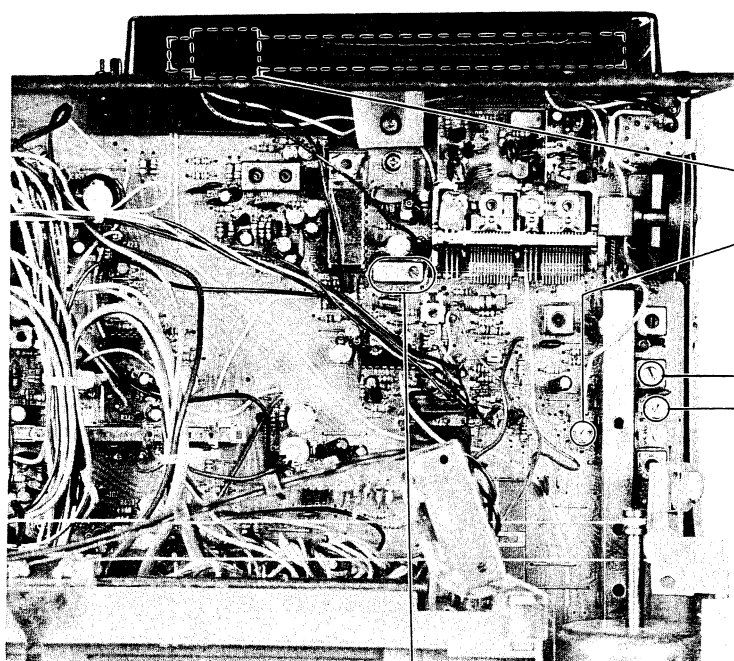
E model

MW SECTION

Setting: FUNCTION (2) switch: TUNER  
FUNCTION (1) switch: MW



- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.



## MW TRACKING ADJUSTMENT

Adjust for maximum reading on VOM .

|      |          |
|------|----------|
| L54  | 620 kHz  |
| CT54 | 1400 kHz |

## MW FREQUENCY COVERAGE ADJUSTMENT

Adjust for maximum reading on VOM .

|      |          |
|------|----------|
| L51  | 520 kHz  |
| CT51 | 1680 kHz |

CFU101

468 kHz

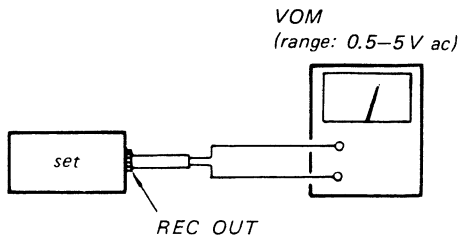
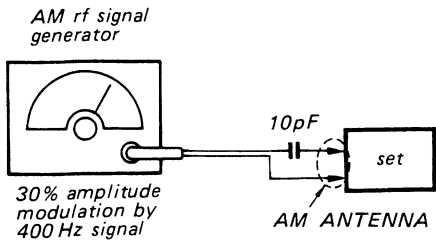
Adjust for a maximum reading on VOM.

AM IF ALIGNMENT

E model

SW1, 2 SECTION

Setting: FUNCTION (2) switch: TUNER  
FUNCTION (1) switch: SW1 or SW2



- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

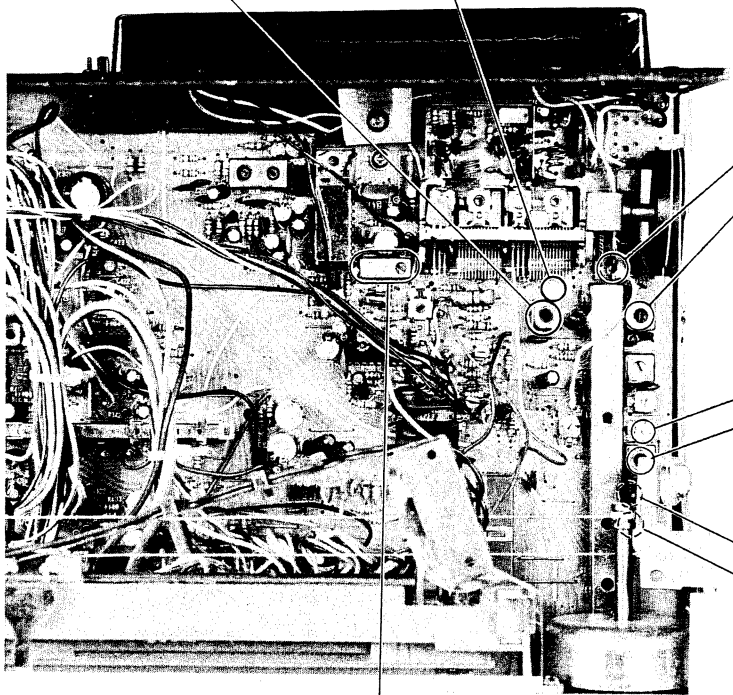
| SW 2 FREQUENCY COVERAGE ADJUSTMENT   |          |
|--------------------------------------|----------|
| Adjust for a maximum reading on VOM. |          |
| 6.8 MHz                              | 18.4 MHz |
| L53                                  | CT53     |

| SW 1 FREQUENCY COVERAGE ADJUSTMENT |         |
|------------------------------------|---------|
| Adjust for maximum reading on VOM. |         |
| CT52                               | 6.5 MHz |
| L52                                | 2.1 MHz |

| SW2 TRACKING ADJUSTMENT              |          |
|--------------------------------------|----------|
| Adjust for a maximum reading on VOM. |          |
| CT56                                 | 18.4 MHz |
| L56                                  | 6.8 MHz  |

| SW1 TRACKING ADJUSTMENT            |         |
|------------------------------------|---------|
| Adjust for maximum reading on VOM. |         |
| CT55                               | 6.5 MHz |
| L55                                | 2.1 MHz |

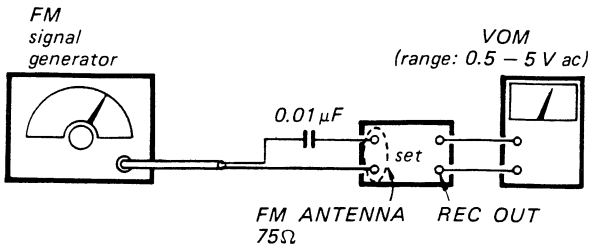
|                                      |
|--------------------------------------|
| CFU101                               |
| 468 kHz                              |
| Adjust for a maximum reading on VOM. |
| AM IF ALIGNMENT                      |



FM SECTION

FM FREQUENCY COVERAGE AND TRACKING ADJUSTMENT

Setting: FUNCTION (2) switch: TUNER  
FUNCTION (1) switch: FM MONO



- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

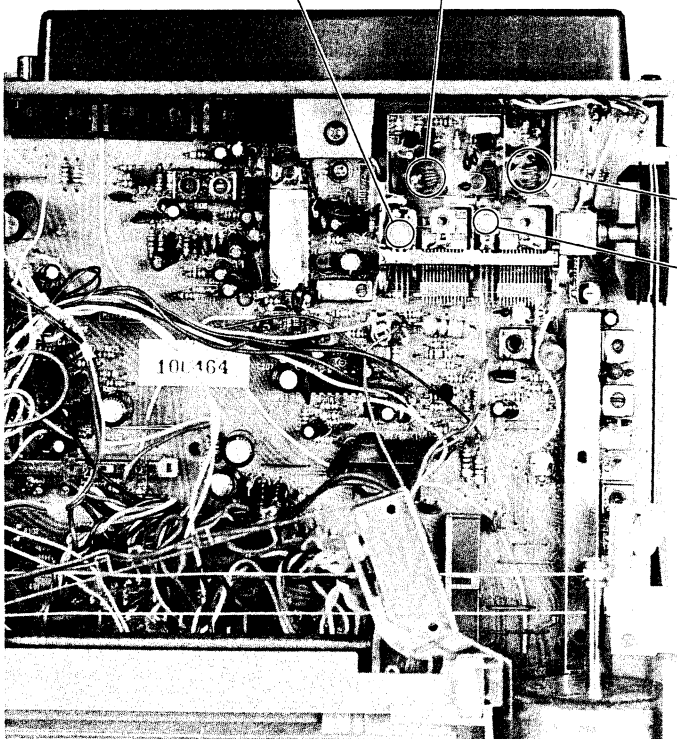
FM FREQUENCY COVERAGE ADJUSTMENT

|                                      |                     |
|--------------------------------------|---------------------|
| Adjust for a maximum reading on VOM. |                     |
| 108.5 MHz (108 MHz)                  | 87.1 MHz (87.5 MHz) |
| CT2                                  | L3                  |

( ) : in West Germany

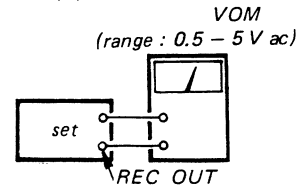
| FM TRACKING ADJUSTMENT               |                     |
|--------------------------------------|---------------------|
| Adjust for a maximum reading on VOM. |                     |
| L1                                   | 87.1 MHz (87.5 MHz) |
| CT1                                  | 108.5 MHz (108 MHz) |

( ) : in West Germany



### FM DISCRIMINATOR ALIGNMENT 1

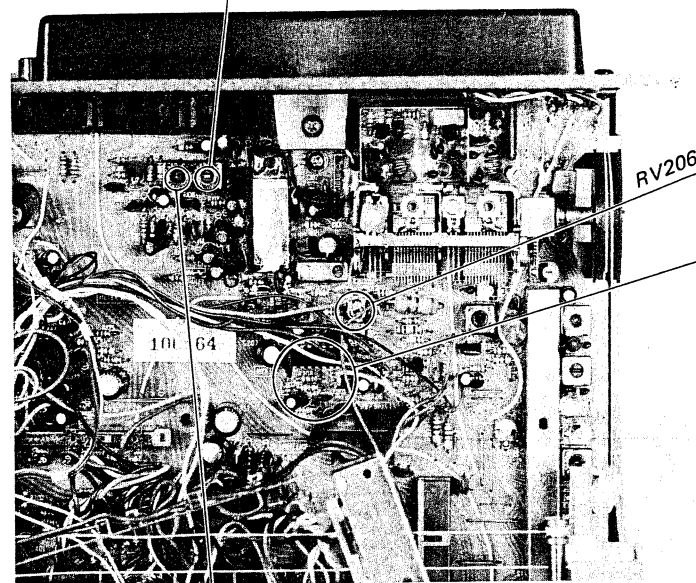
Setting: FUNCTION (2) switch: TUNER  
FUNCTION (1) switch: FM MONO



#### Procedure:

1. Detune the set.
2. Adjust T101 (primary side) for a maximum reading on the VOM.

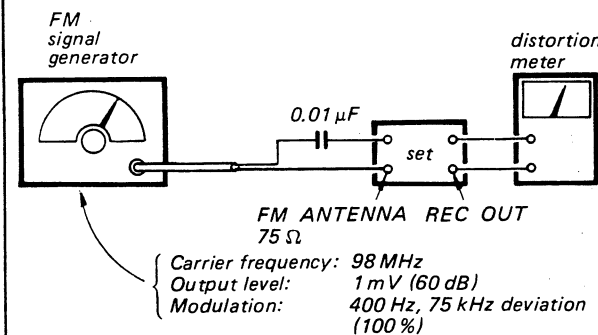
T101 (primary side)



T101 (secondary side)

### FM DISCRIMINATOR ALIGNMENT 2

Setting: FUNCTION (2) switch: TUNER  
FUNCTION (2) switch: FM MONO



#### Procedure:

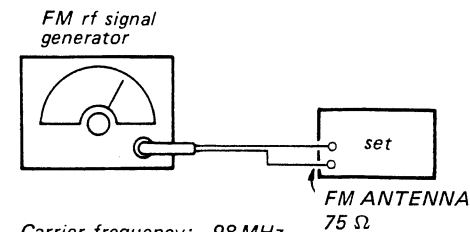
- Adjust T101 (secondary side) for a minimum reading on the distortion meter.
- Perform this adjustment after the FM discriminator alignment 1.

### 19 kHz ADJUSTMENT

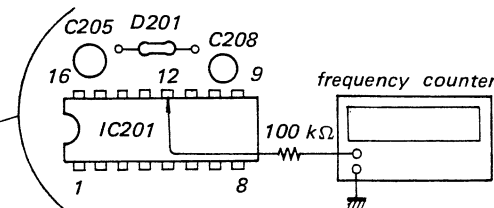
Setting: FUNCTION (2) switch: TUNER  
FUNCTION (1) switch: FM STEREO

#### A) Regular Method

##### Procedure:



Carrier frequency: 98 MHz  
Modulation: 400 Hz, 75 kHz deviation (100%)  
Output level: 1 mV (60 dB)

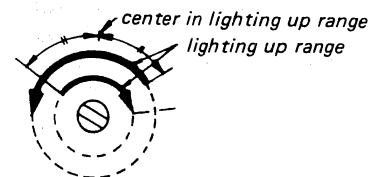


1. Tune the set to 98 MHz.
2. Adjust RV206 for 19 kHz  $\pm$ 30 Hz on the counter.

#### B) Simple Method

##### Procedure:

1. Tune the set to the FM stereo broadcasting signal.
2. Turn RV206 clockwise or counterclockwise and memorize the lighting-up range of D202 (STEREO).
3. Secure RV206 at the center in lighting-up range of both turns as shown below.



### — TAPE RECORDER SECTION —

Note: The adjustment should be performed in the order given in this service manual. The adjustments should be performed for both L-CH and R-CH.

Switches and controls should be set as follows unless otherwise specified.

EQ switch . . . . . TYPE I  
FUNCTION (2) switch . . . . . AUX  
MONITOR switch . . . . . CASSETTE/(MIC)  
BIAS switch . . . . . LOW

- Set the BIAS and EQ switches according to the tape as follows.

| Tape  | BIAS switch | EQ switch |
|-------|-------------|-----------|
| CS-10 | MED (I/III) | TYPE I    |
| CS-25 | HIGH (II)   | TYPE II   |
| CS-30 | MED (I/III) | TYPE III  |

#### Standard Record:

Supply the standard input signal to the input jack and set the REC LEVEL control to obtain the standard output signal level.

#### Standard Input Level

|                  | MIC             | AUX            |
|------------------|-----------------|----------------|
| source impedance | 600 $\Omega$    | 47 k $\Omega$  |
| input level      | 3.1 mV (-48 dB) | 0.44 V (-5 dB) |

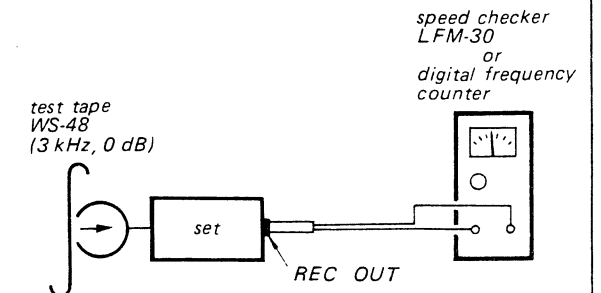
#### Standard Output Level

|                | REC OUT         |
|----------------|-----------------|
| load impedance | 10 k $\Omega$   |
| output level   | 0.25 V (-10 dB) |

### Tape Speed Adjustment

#### Procedure:

Mode: playback

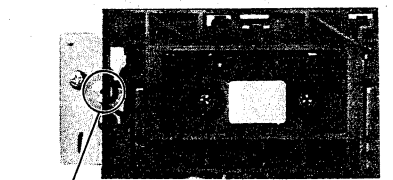


#### Specification:

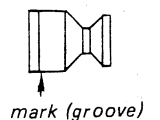
| Speed checker | Digital frequency counter |
|---------------|---------------------------|
| -2 to +2.5 %  | 2,940 - 3,075 Hz          |

Frequency difference between beginning and end of tape should be within 1 % (30 Hz).

#### Adjustment Location:



If necessary, replace the motor pulley.

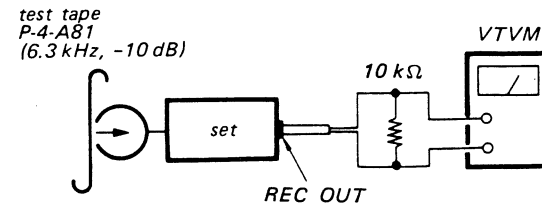


| Motor pulley Part No. | Marking     | Tape speed change |
|-----------------------|-------------|-------------------|
| 3-549-088-01          | one groove  | up                |
| 3-549-088-11          | no mark     | down              |
| 3-549-088-21          | two grooves | down              |

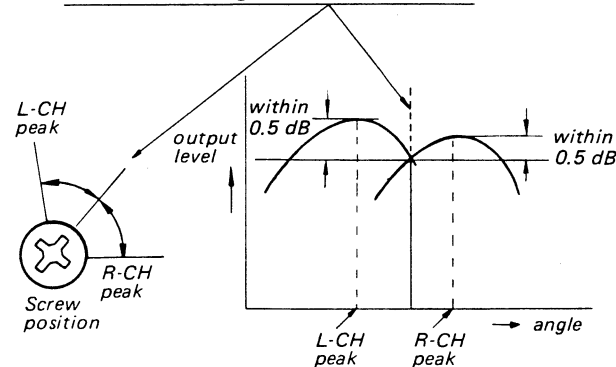
## Record/playback Head Azimuth Adjustment

## Procedure:

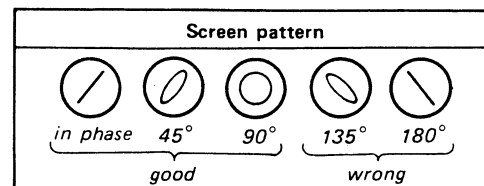
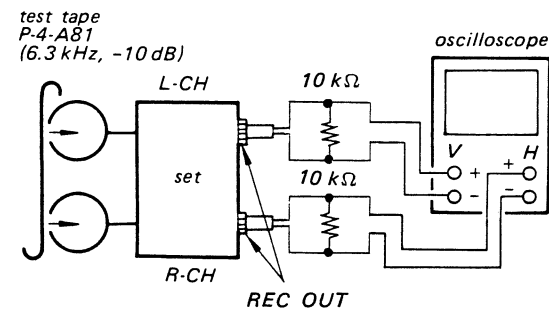
1. Mode: playback



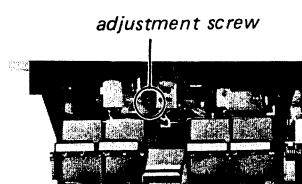
2. Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw where both of output levels match together within 0.5 dB.



3. Phase Check  
Mode: playback



Adjustment Location:

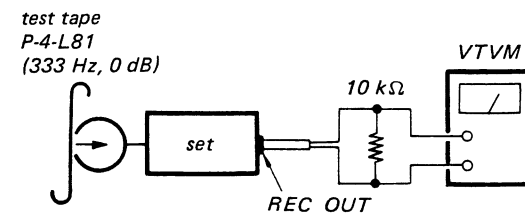


## Playback Level Adjustment

Setting: EQ switch: TYPE I

## Procedure:

1. Mode: playback



2. Adjust RV701, RV801 so that the REC OUT becomes -10 dB.

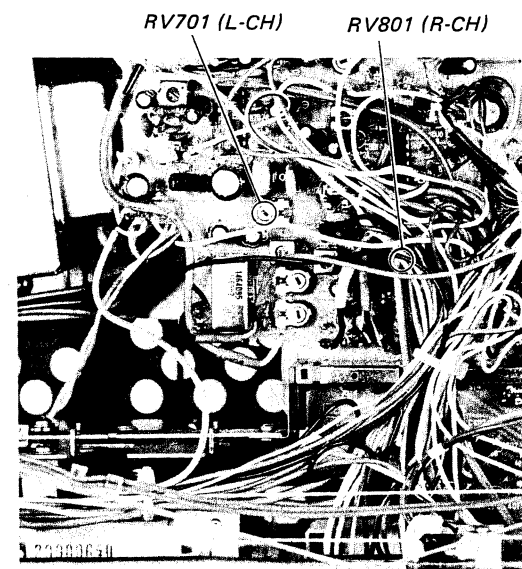
Adjustment Location:  
- tuner & cassette board -

Photo : E model

## Record Bias Adjustment

Setting: EQ switch: TYPE II

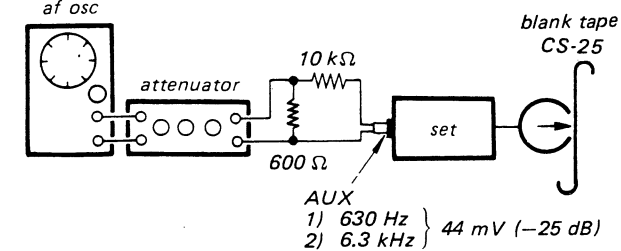
BIAS switch : HIGH (II)

DOLBY NR switch: OFF

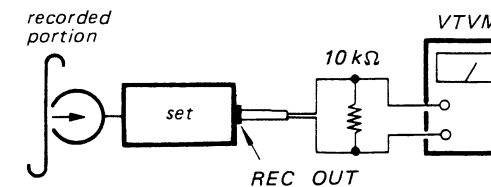
ISS switch: 2

## Procedure:

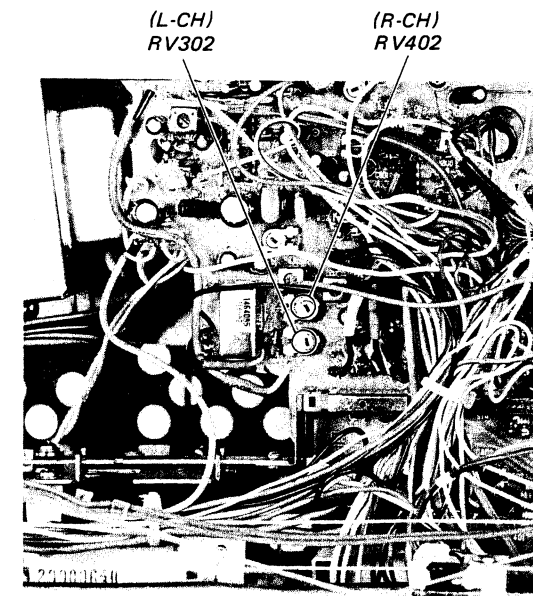
1. Mode : Standard record (See page 16.)



2. Mode : playback



3. Confirm that the playback output levels of 630 Hz and 6.3 kHz are within  $\pm 1$  dB. If necessary, adjust RV302 and RV402 and repeat steps 1 and 2 to obtain this specification.

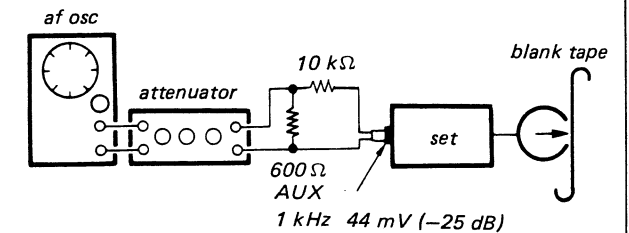
Adjustment Location:  
- tuner & cassette board -

## Record Level Adjustment

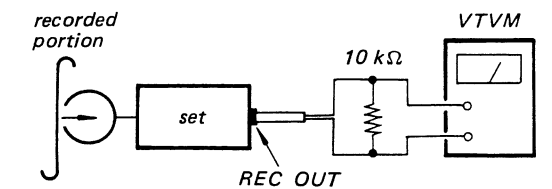
Setting: DOBLY NR switch: OFF

## Procedure:

Mode: standard record (See Page 16.)

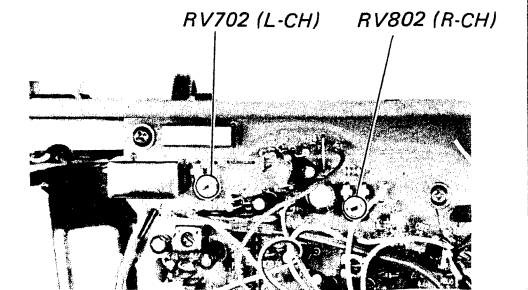


Mode: playback



1. Load tape CS-25. Switch the EQ switch to TYPE II and BIAS switch to HIGH (II) and record the tape.
2. Playback the tape and confirm that the REC OUT level is -10 dB.
3. If necessary, adjust RV702 and RV802 under REC mode and repeat steps 1 and 2 to obtain the specification above.
4. Load tape CS-10. Switch the EQ switch to TYPE I and BIAS switch to MED and record the tape. Playback the tape and confirm that the output is within the specification shown below.
5. Load tape CS-30. Switch the EQ switch to TYPE III and BIAS switch to MED (I/III) and record the tape. Playback the tape and confirm that the output is within the specification shown below.

Specification: -9.5 to -10.5 dB

Adjustment Location:  
-tuner & cassette board -

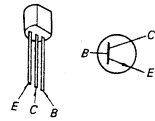
# SECTION 4 DIAGRAMS

HST-49A/49AB HST-49A/49AB

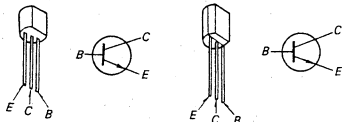
## Replacement Semiconductors

For replacement, use semiconductors except in ( ).

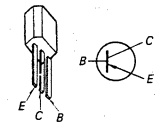
Q1-4: 2SC930



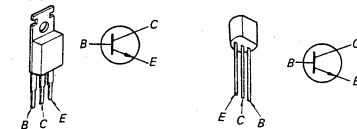
Q101, 151 : 2SC1364 (2SC945P)  
Q301, 401 : 2SC1362 (2SC1570G)  
Q302, 402 :



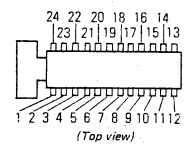
Q150: 2SA1027R (2SA678)



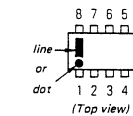
Q901, Q902: 2SC1173 (2SC900E)



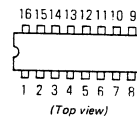
IC101: CX163



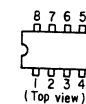
IC102: TL489CP (TL489C)



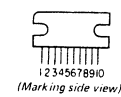
IC201: LA3350A  
IC701, 801: CX174



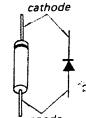
IC301, 302:  $\mu$ PC4558C



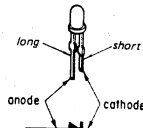
IC501, 601: HA1350S (HA1350)



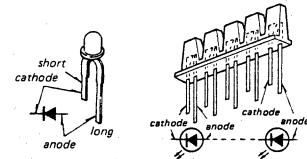
D101-104 : 1S1555 (1S2473)  
D152, 201 : 1S1555 (1S2473)  
D305, 405 : 1S1555 (1S2473)  
D306, 406 : 1S1555 (1S2473)  
D301, 401 : 1T22AM (1S188AM)  
D302, 402 : 1T22AM (1S188AM)  
D905 : 1S1555 (1S2471)  
D906, 907 : 10E2



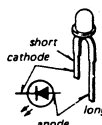
D105-109 : SLB26GG1  
D323-326 : SLB26GG1  
D202 : SLP131B



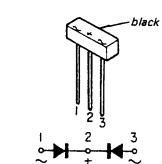
D150, 151 : TLR124 (GL105R5)  
D404 :



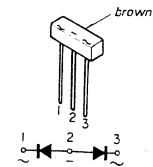
D403: SY405D1 (SY405D)



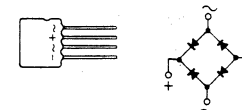
D901: S3VC40 (S2VC20)



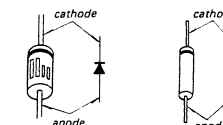
D902: S3VC40R (S2VC20R)



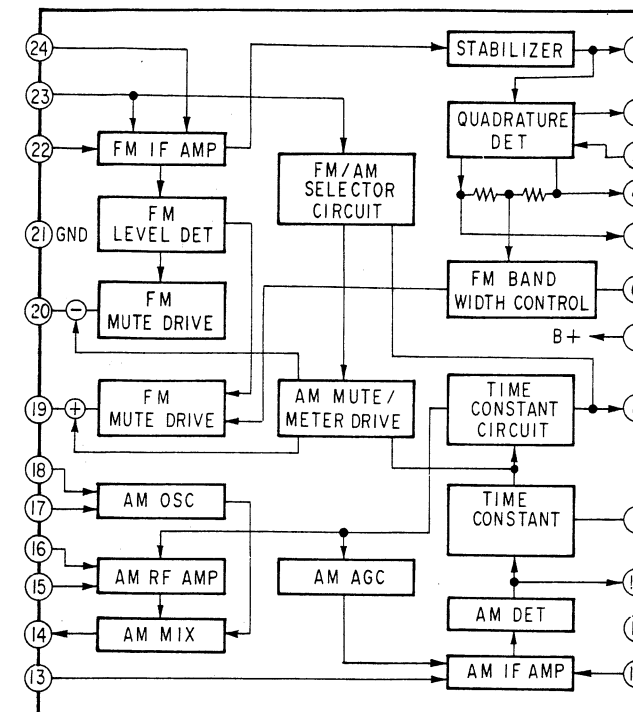
D903: DS185E



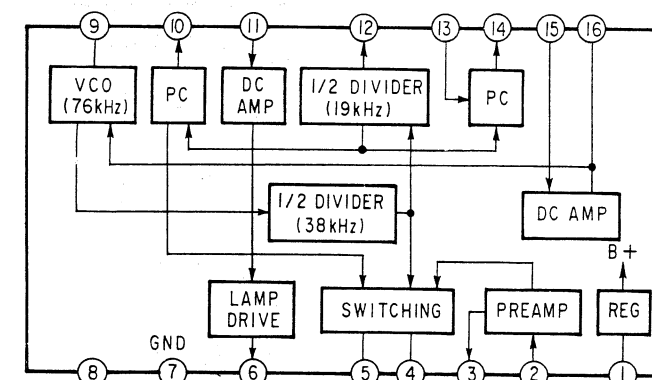
D904: EQB01-18 (RD24EB)



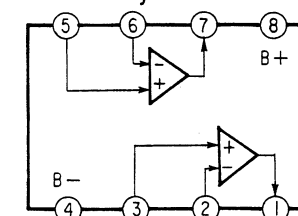
IC101 CX163



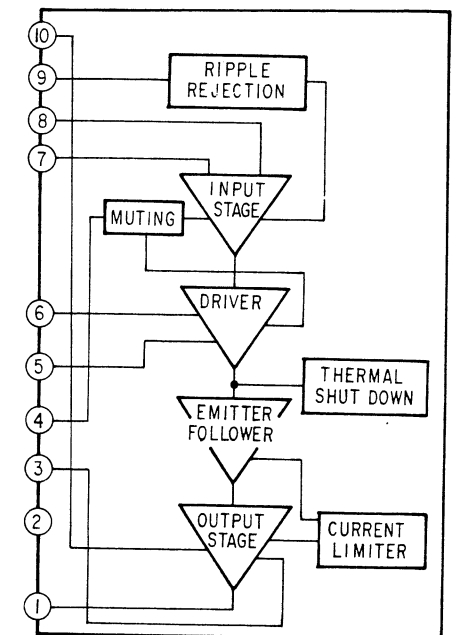
IC201 LA3350



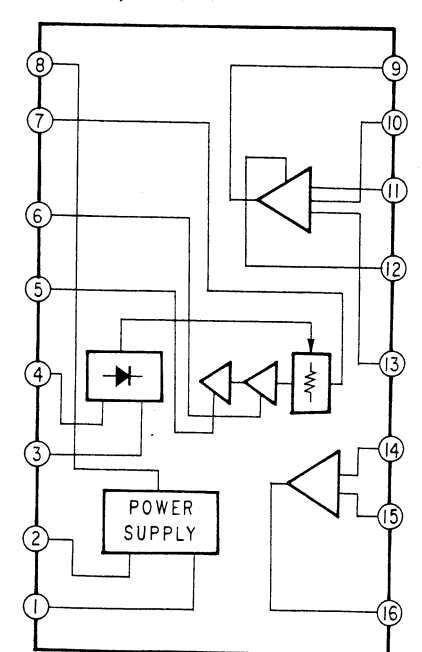
IC301  $\mu$ PC4558C



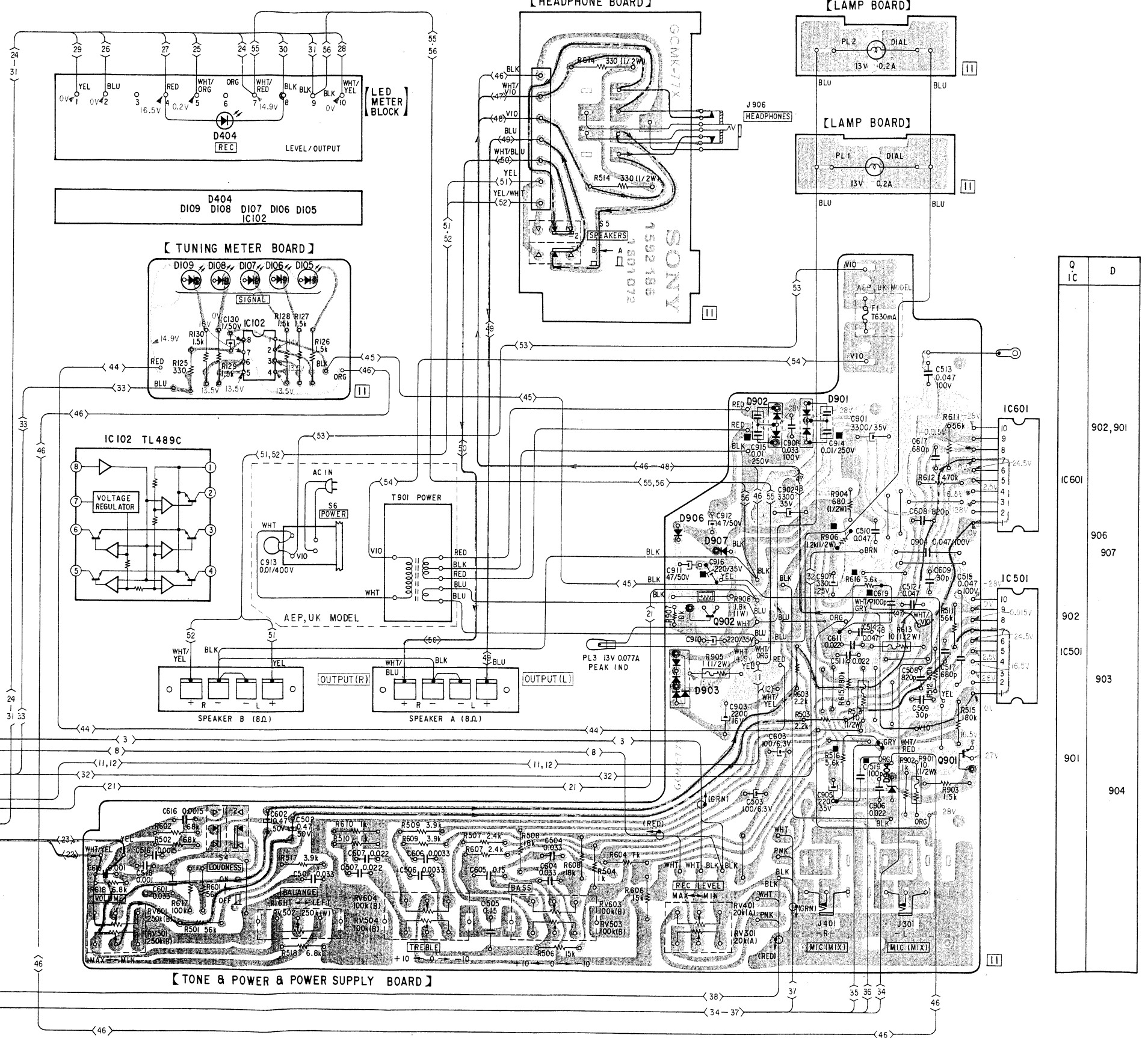
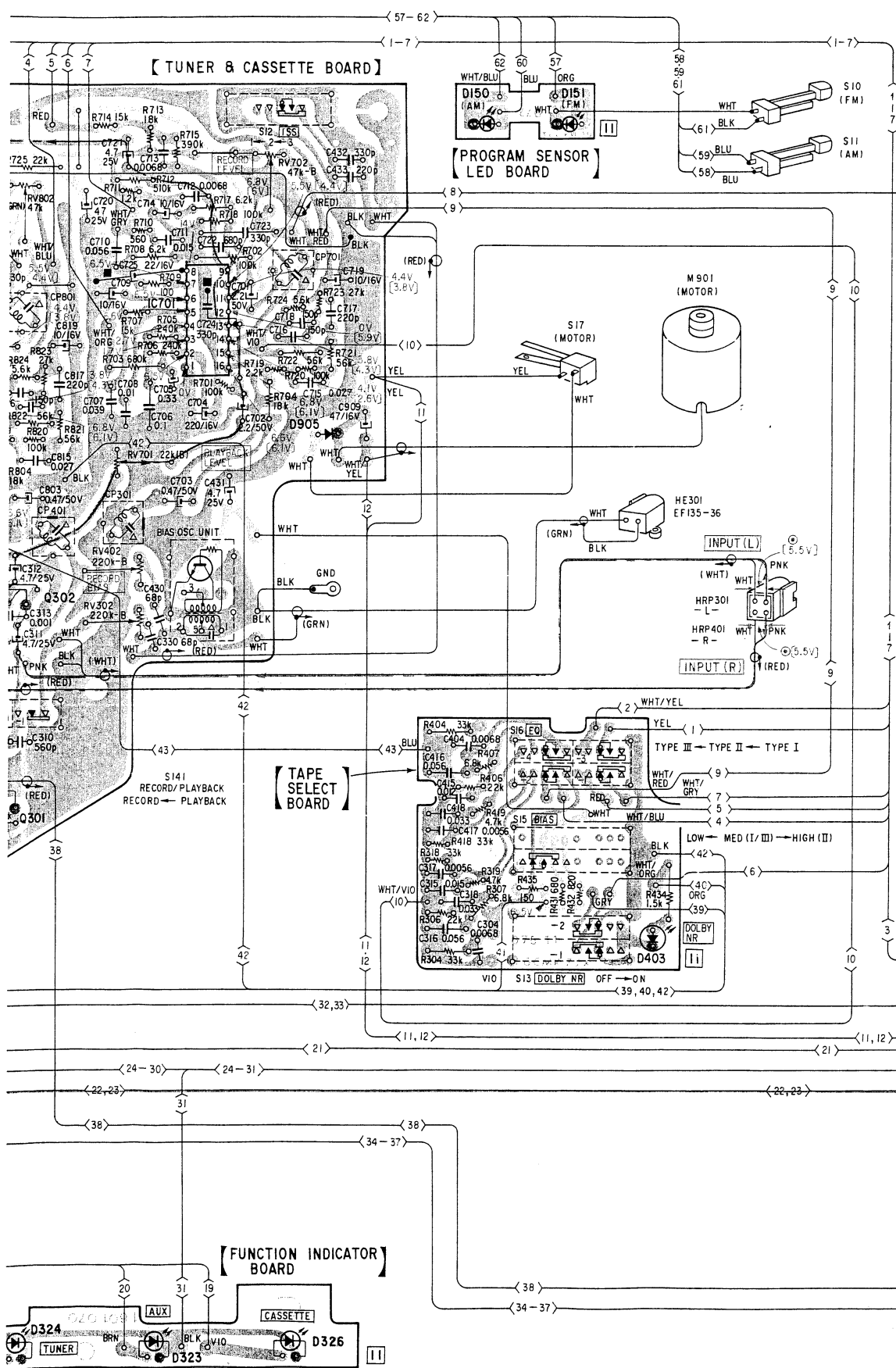
IC501, 601 HA1350



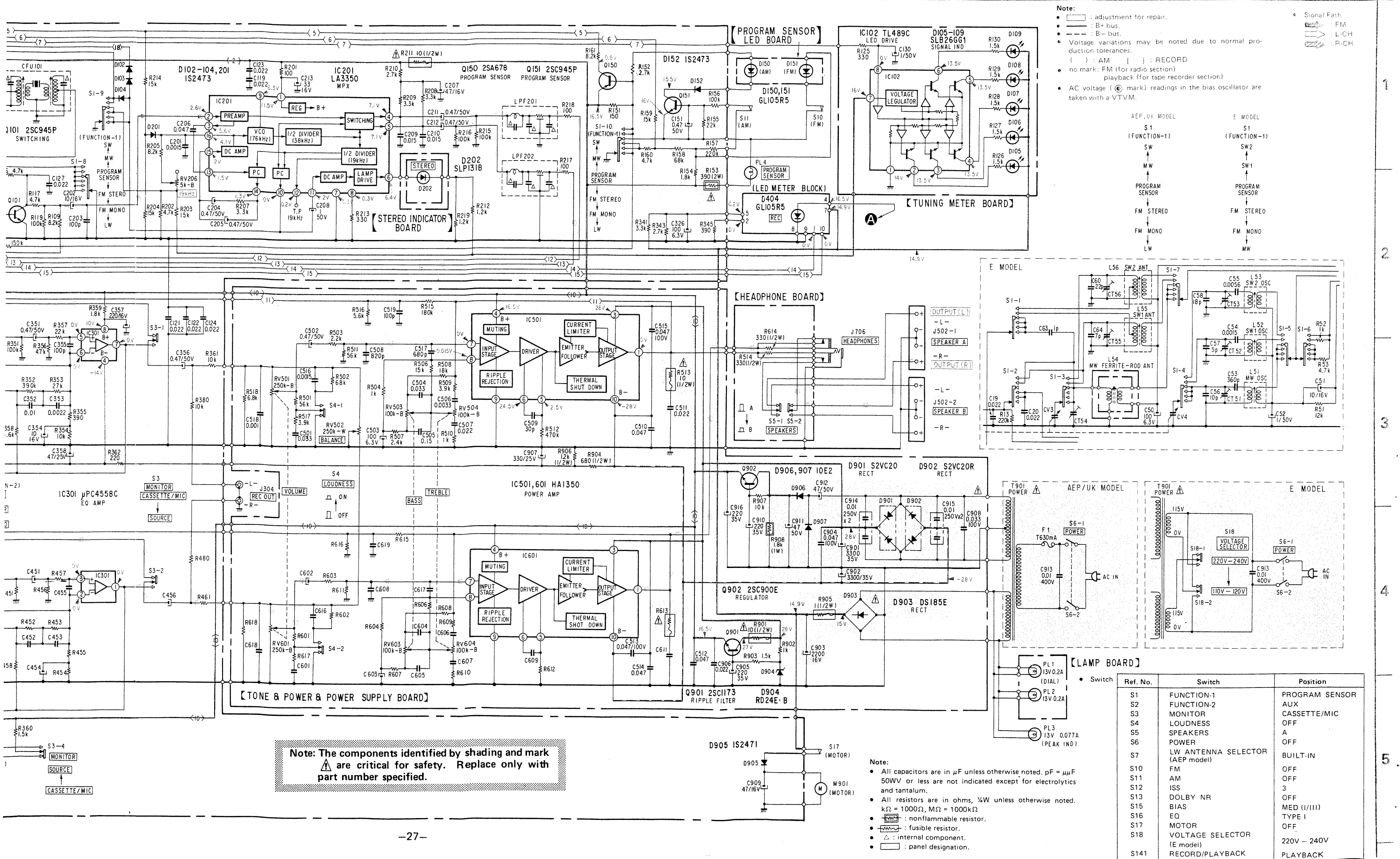
IC701, 801 CX174



**HST-49A/49AB**

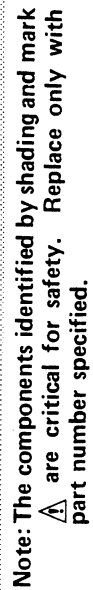




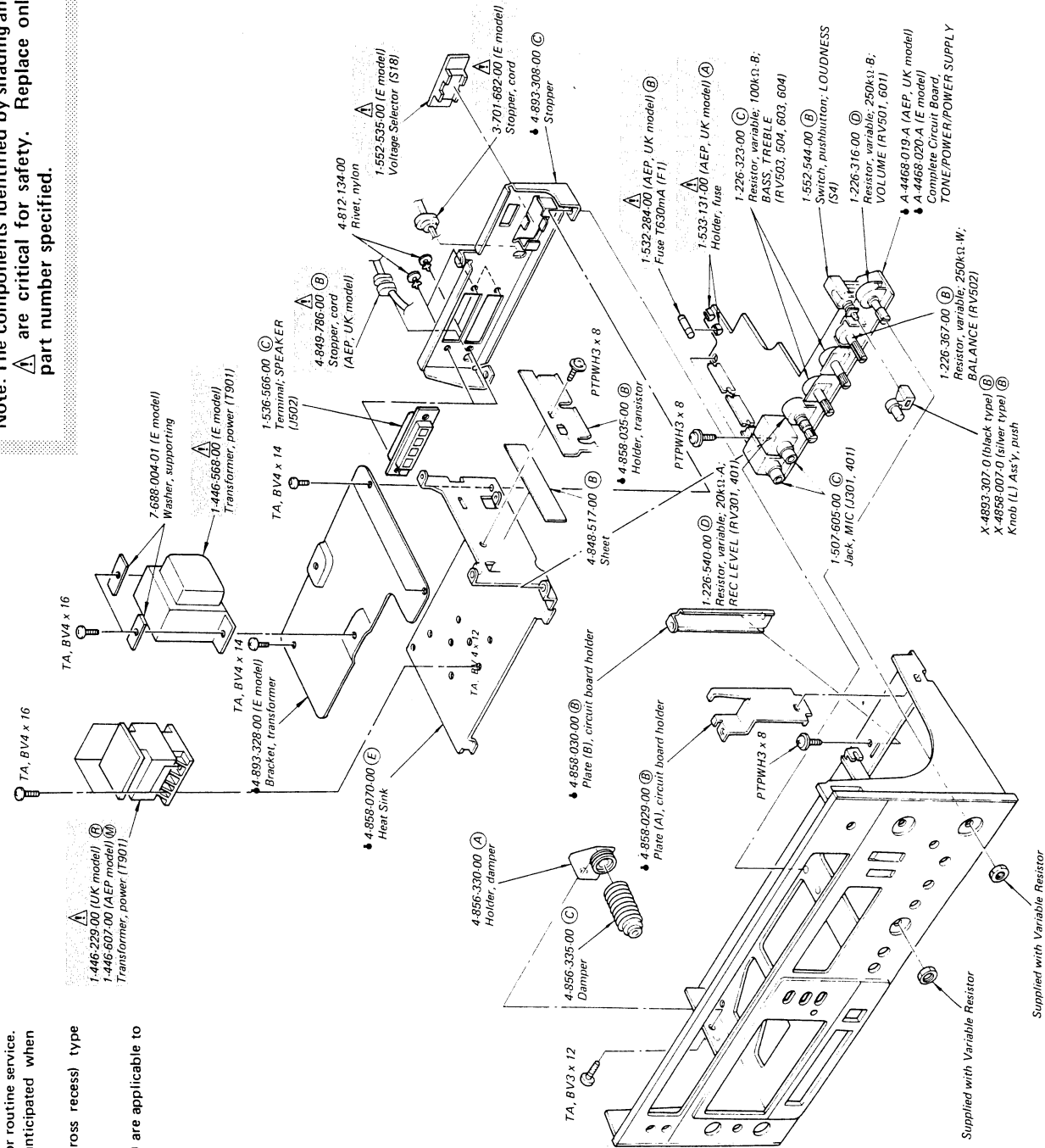


**HST-49A/49AB**

5-3.



- Items marked “” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All screws are Phillips (cross recess) type unless otherwise noted.  
(-) = slotted head
- Circled letters () are applicable to European models only.



**Note:** The components identified by shading and mark  are critical for safety. Replace only with part number specified.

A

B

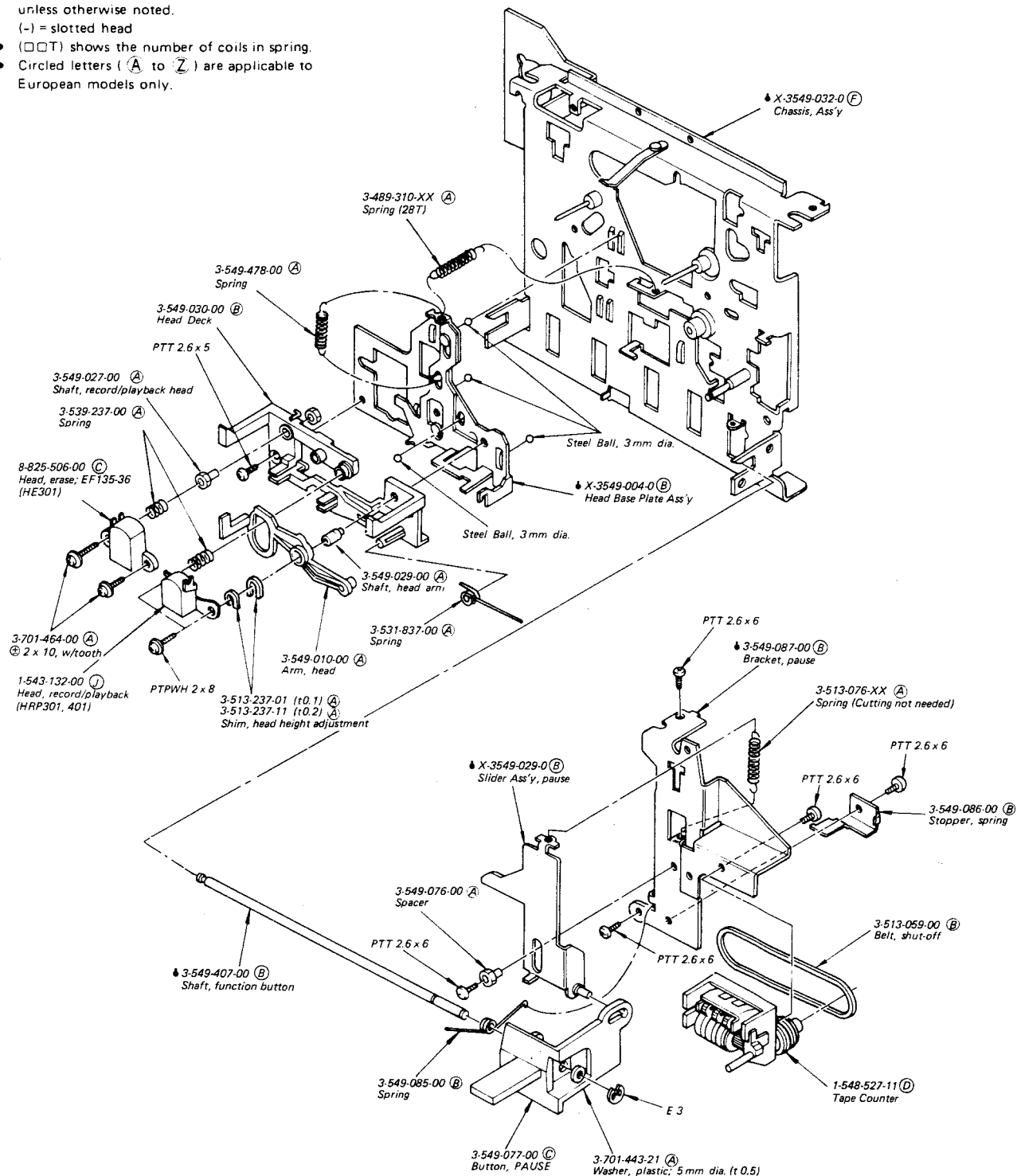
C

D

## 5-5.

### Note:

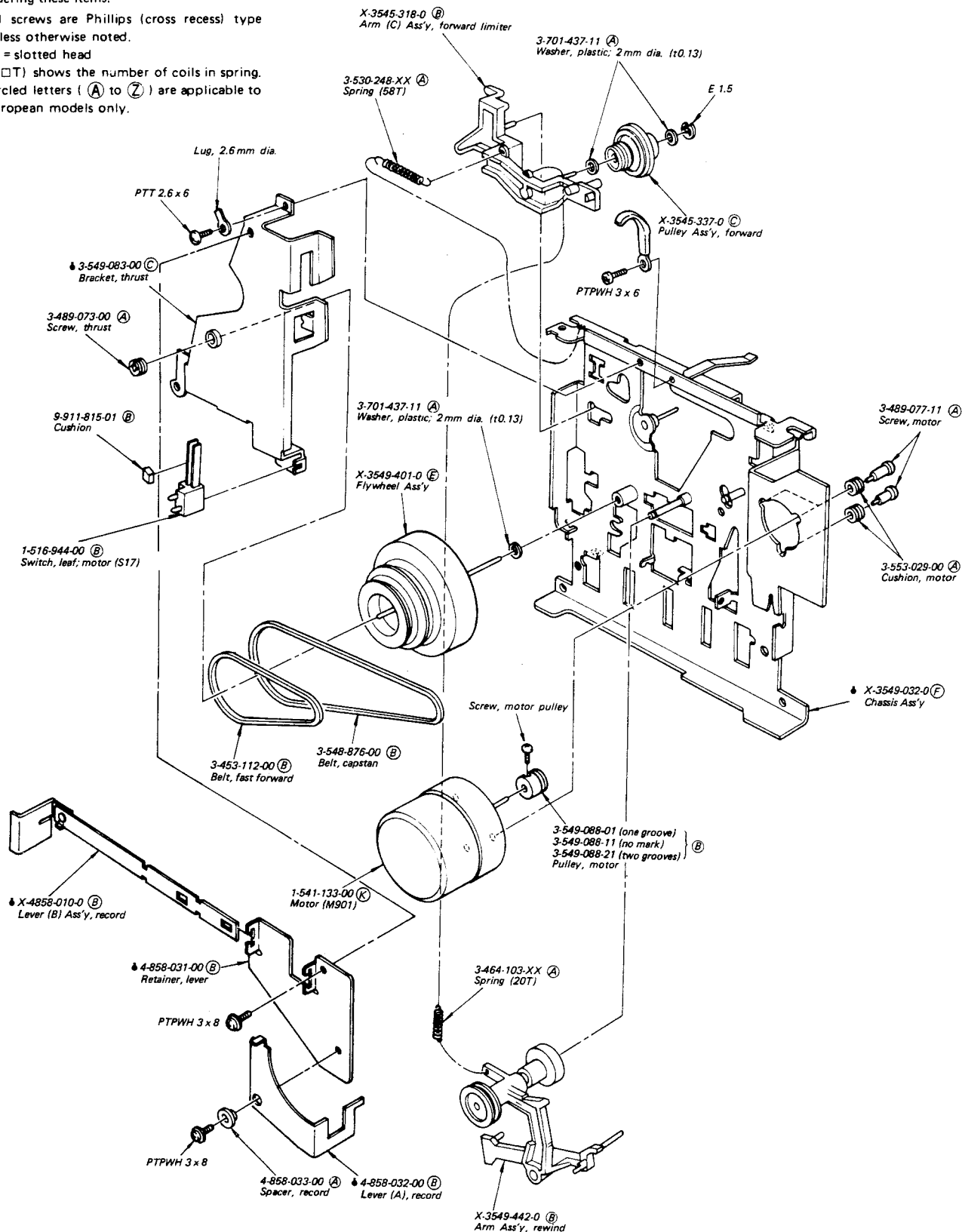
- Items marked "X" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All screws are Phillips (cross recess) type unless otherwise noted.  
(-) = slotted head
- (□□T) shows the number of coils in spring.
- Circled letters (A to Z) are applicable to European models only.



## 5-6.

### Note:

- Items marked "▲" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All screws are Phillips (cross recess) type unless otherwise noted.  
(-) = slotted head
- (□□T) shows the number of coils in spring.
- Circled letters (A) to (Z) are applicable to European models only.



A

B

C

D

## 5-7.

### Note:

- Items marked "ⓐ" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All screws are Phillips (cross recess) type unless otherwise noted.  
(-) = slotted head
- (□□T) shows the number of coils in spring.
- Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

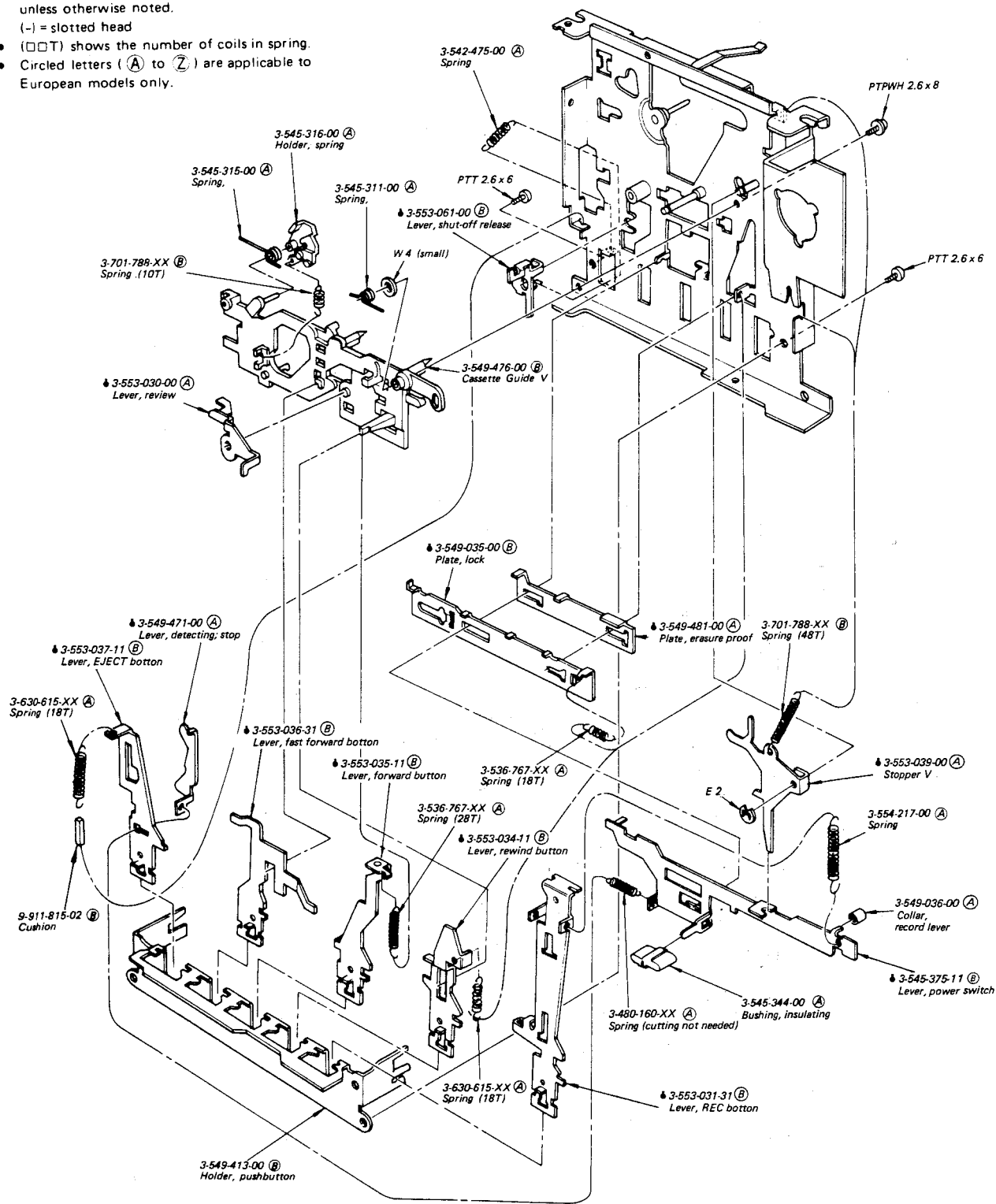
1

2

3

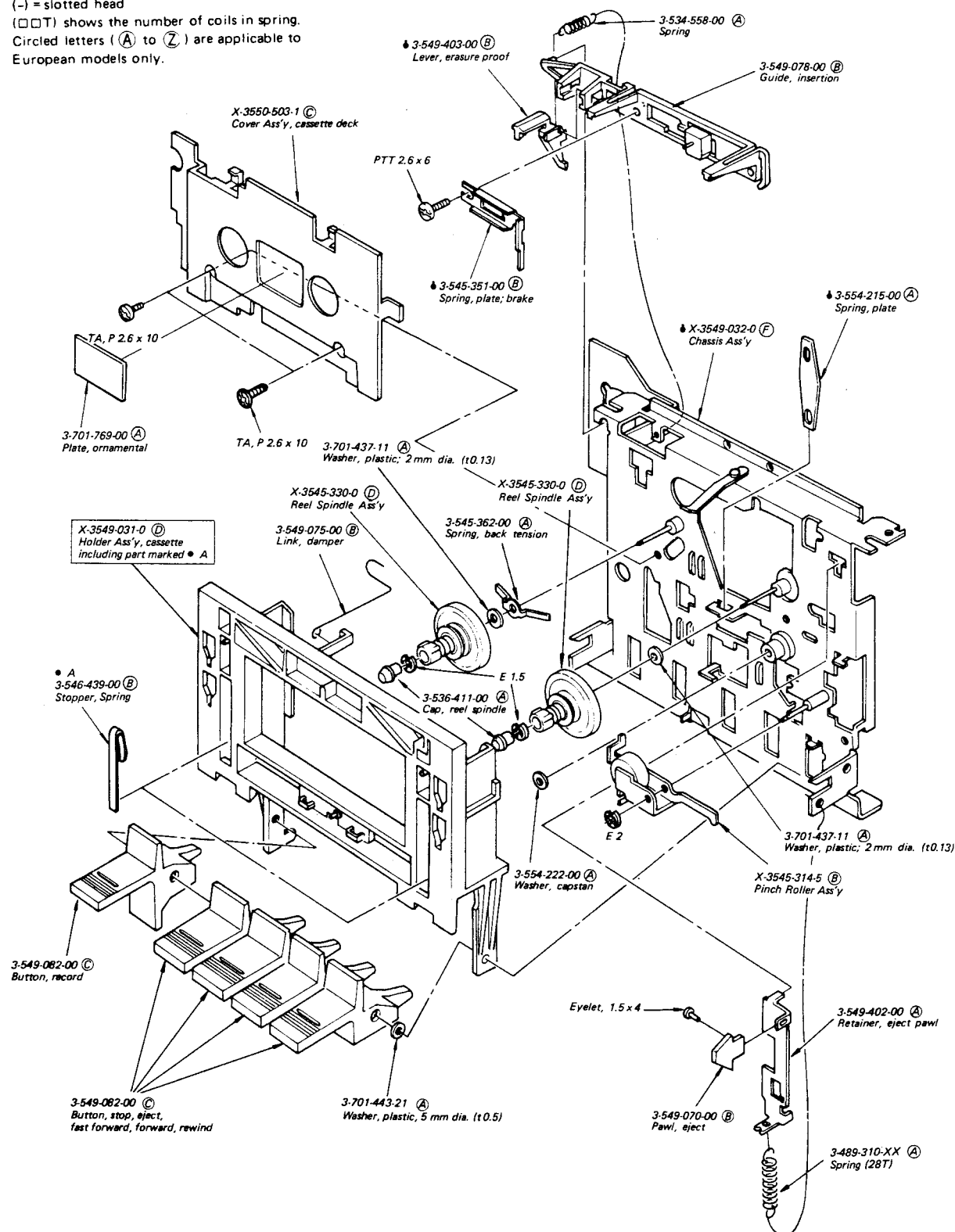
4

5



**Note:**

- Items marked "A" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All screws are Phillips (cross recess) type unless otherwise noted.  
(-) = slotted head
- (□□□) shows the number of coils in spring.
- Circled letters (A) to (Z) are applicable to European models only.



## SECTION 6

## ELECTRICAL PARTS LIST

Note: Circled letters (A) to (Z) are applicable to European models only.

Ref. No.    Part No.    Description

## SEMICONDUCTORS

## Transistors

|             |              |              |
|-------------|--------------|--------------|
| Q1-4        | 8-729-803-04 | (B) 2SC930   |
| ⇒ Q101      | 8-729-633-47 | (B) 2SC1364  |
| ⇒ Q150      | 8-729-612-77 | (B) 2SA1027R |
| ⇒ Q151      | 8-729-663-47 | (B) 2SC1364  |
| ⇒ Q301, 401 | 8-729-665-47 | (B) 2SC1362  |
| ⇒ Q302, 402 |              |              |
| Q901        | 8-783-217-33 | (C) 2SC1173  |
| ⇒ Q902      | 8-783-217-33 | (C) 2SC1173  |

## ICs

|              |              |                   |
|--------------|--------------|-------------------|
| IC101        | 8-751-680-01 | (J) CX168         |
| ⇒ IC102      | 8-759-904-89 | (D) TL489CP       |
| IC201        | 8-759-833-50 | (F) LA3350A       |
| IC301, 302   | 8-759-145-58 | (D) $\mu$ PC4558C |
| ⇒ IC501, 601 | 8-759-313-50 | (H) HA1350S       |
| IC701, 801   | 8-759-101-74 | (H) CX174         |

## Diodes

|             |              |              |
|-------------|--------------|--------------|
| ⇒ D101-104  | 8-719-815-55 | (B) 1S1555   |
| D105-109    | 8-719-902-63 | (B) SLB26GG1 |
| ⇒ D150, 151 | 8-719-812-41 | (B) TLR124   |
| ⇒ D152      | 8-719-815-55 | (B) 1S1555   |
| ⇒ D201      | 8-719-815-55 | (B) 1S1555   |

|             |              |              |
|-------------|--------------|--------------|
| D202        | 8-719-901-31 | (B) SLP131B  |
| ⇒ D305, 405 | 8-719-815-55 | (B) 1S1555   |
| ⇒ D306, 406 |              |              |
| D323-326    | 8-719-902-63 | (B) SLB26GG1 |
| ⇒ D403      | 8-719-101-45 | (B) SY405D1  |

|        |                |              |
|--------|----------------|--------------|
| ⇒ D404 | 8-719-812-41   | (B) TLR124   |
| ⇒ D901 | △ 8-719-500-34 | (C) S3VC40   |
| ⇒ D902 | △ 8-719-501-34 | (C) S3VC40R  |
| D903   | △ 1-800-914-11 | (C) DS185E   |
| ⇒ D904 | 8-719-931-18   | (B) EQB01-18 |

|           |                |            |
|-----------|----------------|------------|
| ⇒ D905    | 8-719-815-55   | (B) 1S1555 |
| D906, 907 | △ 8-719-200-02 | (B) 10E2   |

## COILS

|           |              |          |
|-----------|--------------|----------|
| CP301,401 | 1-409-337-00 | (B) Trap |
| CP701,801 |              |          |

⇒: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.

- Items marked "△" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

Ref. No.    Part No.    Description

|         |                |                                               |
|---------|----------------|-----------------------------------------------|
| ⚡ L1    | 1-420-893-00   | (A) FM Rf                                     |
| ⚡ L2    | 1-420-840-00   | (A) FM If Trap                                |
| ⚡ L3    | 1-420-919-00   | (A) FM OSC                                    |
| L4      | 1-407-189-XX   | (B) 8.2 $\mu$ H, microinductor                |
| L51     | ( 1-405-813-00 | (B) LW OSC (AEP, UK model)                    |
|         | 1-405-814-00   | MW OSC (E model)                              |
| L52     | ( 1-405-814-00 | (B) MW OSC (AEP, UK model)                    |
|         | 1-405-815-00   | SW1 OSC (E model)                             |
| L53     | ( 1-405-812-00 | (B) SW OSC (AEP, UK model)                    |
|         | 1-405-820-00   | SW2 OSC (E model)                             |
| L54, 55 | 1-401-750-00   | (E) MW/LW Ferrite-rod Antenna (AEP, UK model) |
| L54     | 1-401-742-21   | MW Ferrite-rod Antenna (E model)              |
| L55     | 1-405-745-00   | SW1 Antenna (E model)                         |
| L56     | ( 1-401-741-00 | (B) SW Antenna (AEP, UK model)                |
|         | 1-401-746-00   | SW2 Antenna (E model)                         |
| L57     | 1-401-749-00   | (B) LW EXT Antenna (AEP model)                |
| L101    | 1-407-741-00   | (B) 18 $\mu$ H, microinductor                 |
| L102    | 1-407-178-XX   | (B) 1 $\mu$ H, microinductor                  |

## TRANSFORMERS

|        |                |                       |
|--------|----------------|-----------------------|
| CFU101 | 1-403-827-00   | (D) AM IFT            |
| T101   | 1-404-011-00   | (C) FM Discriminator  |
| T901   | △ 1-446-229-00 | (B) Power (UK model)  |
|        | △ 1-446-568-00 | Power (E model)       |
|        | △ 1-446-607-00 | (M) Power (AEP model) |

## CAPACITORS

All capacitors are in  $\mu$ F and ceramic unless otherwise noted. Common capacitors are omitted. Refer to the lists on pages 40 and 41 for their part numbers.

|     |                |                         |
|-----|----------------|-------------------------|
| C9  | 1-101-982-00   | (A) 24p                 |
| C10 | 1-102-684-00   | (A) 8p                  |
| C11 | 1-101-978-00   | (A) 10p                 |
| C12 | 1-102-643-00   | (A) 27p                 |
| C53 | 1-103-714-00   | 360p styrol (E model)   |
| C54 | 1-103-729-00   | 0.0015 Styrol (E model) |
| C55 | 1-103-743-00   | 0.0056 Styrol (E model) |
| C56 | ( 1-102-871-00 | (A) 43p (AEP, UK model) |
|     | 1-101-999-00   | 10p (E model)           |
| C57 | ( 1-102-746-00 | (A) 8p (AEP, UK model)  |
|     | 1-101-997-00   | 5p (E model)            |

Note: The components identified by shading and mark △ are critical for safety. Replace only with part number specified.

Note: Circled letters (A to Z) are applicable to European models only.

| Ref. No.  | Part No.         | Description         |
|-----------|------------------|---------------------|
| C58       | 1-102-285-00 (B) | 10p (AEP, UK model) |
|           | 1-102-296-00     | 18p (E model)       |
| C705, 805 | 1-131-454-00 (B) | 0.33 16V tantalum   |
| C901, 902 | 1-123-118-00 (E) | 3300 35V elect      |
| C903      | 1-123-325-00 (B) | 2200 16V elect      |
| C904      | 1-108-385-00 (B) | 0.047 100V          |
| C908      | 1-108-383-00 (B) | 0.033 100V          |
| C911, 912 | 1-123-359-00 (B) | 47 50V              |
| C913      | 1-161-744-00 (B) | 0.01 400V           |
| C914, 915 | 1-102-394-00 (B) | 0.01 250V x 2       |
| CT1, 2    | 1-151-345-00 (H) | Tuning              |
| CV1-4     |                  |                     |
| CT51-56   | 1-141-138-XX (B) | Trimmer             |

## RESISTORS

All resistors are in ohms. Common 1/4W carbon resistors are omitted. Refer to the list on page 42 for their part numbers.

|              |                  |                                    |
|--------------|------------------|------------------------------------|
| R110         | 1-212-875-00 (A) | 56 1/4W fusible                    |
| R153         | 1-206-654-00 (B) | 390 2W fusible                     |
| R211         | 1-212-958-00 (A) | 10 1/2W fusible                    |
| R513, 613    | 1-212-958-00 (B) | 10 1/2W fusible                    |
| R514, 614    | 1-244-861-00 (A) | 330 1/2W composition               |
| R901         | 1-212-958-00 (B) | 10 1/2W fusible                    |
| R904         | 1-244-861-00 (A) | 680 1/2W composition               |
| R905         | 1-217-422-00 (B) | 1 1/2W fusible                     |
| R906         | 1-244-875-00 (A) | 1.2k 1/2W composition              |
| R908         | 1-213-146-00 (A) | 1.8k 1W metal oxide (nonflammable) |
| RV206        | 1-226-235-00 (B) | 5k-B, adjustable; 19kHz            |
| RV301, 401   | 1-226-540-00 (D) | 20k-A, variable; REC LEVEL         |
| ⇒ RV302, 402 | 1-226-240-00 (B) | 200k-B, adjustable; record bias    |
| RV501, 601   | 1-226-316-00 (D) | 250k-B, variable; VOLUME           |
| RV502        | 1-226-367-00 (B) | 250k-W, variable; BALANCE          |
| RV503, 603   | 1-226-323-00 (C) | 100k-B, variable; BASS, TREBLE     |
| RV504, 604   |                  |                                    |
| ⇒ RV701, 801 | 1-226-237-00 (B) | 20k-B, adjustable; playback level  |
| ⇒ RV702, 802 | 1-226-238-00 (B) | 50k-B, adjustable; record level    |

## SWITCHES

|    |                  |                            |
|----|------------------|----------------------------|
| S1 | 1-552-597-00 (F) | Rotary-slide, FUNCTION (1) |
| S2 | 1-552-628-00 (C) | Slide, FUNCTION (2)        |
| S3 | 1-552-548-21 (C) | Slide, MONITOR             |
| S4 | 1-552-544-00 (B) | Pushbutton, LOUDNESS       |
| S5 | 1-552-545-00 (B) | Pushbutton, SPEAKERS       |
| S6 | 1-552-531-00 (D) | Pushbutton, POWER          |

• Items marked "•" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

⇒ Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.

| Ref. No. | Part No.         | Description                                 |
|----------|------------------|---------------------------------------------|
| S7       | 1-516-927-00 (C) | Pushbutton, LW ANTENNA SELECTOR (AEP model) |
| S10, 11  | 1-552-550-00 (B) | Leaf, FM, AM                                |
| S12      | 1-516-870-00 (B) | Slide, ISS                                  |
| S13      | 1-552-594-00 (C) | Slide, DOLBY NR (silver type)               |
|          | 1-552-977-00 (C) | Slide, DOLBY NR (black type)                |
| S15, 16  | 1-552-546-00 (C) | Slide, BIAS, EQ (silver type)               |
|          | 1-552-976-00 (D) | Slide, BIAS, EQ (black type)                |
| S17      | 1-516-944-00 (B) | Leaf, motor                                 |
| S18      | 1-552-535-00 (A) | Voltage Selector (E model)                  |
| S141     | 1-552-627-00 (C) | Slide, record/playback                      |

## JACKS

|           |                  |                                |
|-----------|------------------|--------------------------------|
| J1        | 1-536-560-00 (B) | Terminal Strip, ANTENNA        |
| J301, 401 | 1-507-605-00 (C) | MIC                            |
| J302-304  | 1-507-500-00 (B) | Phono, 2p; AUX, PHONO, REC OUT |
| J502      | 1-536-566-00 (C) | Terminal, SPEAKER              |
| J706      | 1-507-606-00 (C) | HEADPHONES                     |

## MISCELLANEOUS

|             |                  |                                            |
|-------------|------------------|--------------------------------------------|
| BPF         | 1-231-313-00 (B) | Bandpass Filter                            |
| CF101       | 1-527-248-XX (K) | Filter, solid state 10.7MHz                |
| F1          | 1-532-284-00 (A) | Fuse, T630mA (AEP, UK model)               |
| M901        | 1-541-133-00 (K) | Motor                                      |
| LPF201      | 1-231-303-00 (C) | Lowpass Filter                             |
| LPF202      |                  |                                            |
| HE301       | 8-825-506-00 (C) | Head, erase; EF135-36                      |
| HRP301, 401 | 1-543-132-00 (J) | Head, record/playback                      |
| PL1, 2      | 1-518-323-00 (B) | Lamp, pilot; dial                          |
| PL3         | 1-518-345-00 (B) | Lamp, pilot; peak indicator                |
| PL4         | 1-518-169-XX (B) | Lamp, pilot; PROGRAM SENSOR                |
|             | 1-464-085-00 (D) | Bias Osc Unit                              |
|             | 1-520-407-00 (M) | Meter, LED                                 |
|             | 1-533-131-00 (A) | Holder, fuse (AEP, UK model)               |
|             | 1-534-487-XX (A) | Cord, power; parallel-blade plug (E model) |
|             | 1-534-817-XX (D) | Cord, power (AEP model)                    |
|             | 1-535-115-00 (A) | Terminal, 2p                               |
|             | 1-535-116-00 (A) | Terminal, 3p                               |
|             | 1-535-120-00 (B) | Terminal, 7p                               |
|             | 1-536-566-00 (C) | Plate, terminal                            |

Note: The components identified by shading and mark A are critical for safety. Replace only with part number specified.

Note: Circled letters (A) to (Z) are applicable to European models only.

| <u>Ref. No.</u> | <u>Part No.</u> | <u>Description</u>               |
|-----------------|-----------------|----------------------------------|
|                 | ⚡ 1-551-530-00  | Cord, power; euro-plug (E model) |
|                 | ⚡ 1-551-884-21  | (E) Cord, power (UK model)       |

## Complete Circuit Boards

|                |                                             |
|----------------|---------------------------------------------|
| ⚡ A-4351-145-A | Tuner & Cassette (AEP model)                |
| ⚡ A-4351-146-A | Tuner & Cassette (E model)                  |
| ⚡ A-4351-151-A | Tuner & Cassette (UK model)                 |
| ⚡ A-4468-019-A | Tone & Power & Power Supply (AEP, UK model) |
| ⚡ A-4468-120-A | Tone & Power & Power Supply (E model)       |

## Printed Circuit Boards

|                |                        |
|----------------|------------------------|
| ⚡ 1-601-070-00 | (B) Function Indicator |
| ⚡ 1-601-071-00 | (B) Tuning Meter       |
| ⚡ 1-601-072-00 | (B) Headphone          |
| ⚡ 1-601-075-00 | (B) Tape Select        |
| ⚡ 1-601-076-00 | (A) Stereo Indicator   |

|                |                         |
|----------------|-------------------------|
| ⚡ 1-601-077-00 | (A) Program Sensor, LED |
| ⚡ 1-601-078-00 | (A) Lamp                |

- Items marked "⚡" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

Note: The components identified by shading and mark ⚡ are critical for safety. Replace only with part number specified.

## ACCESSORIES AND PACKING MATERIALS

| <u>Part No.</u> | <u>Description</u>                      |
|-----------------|-----------------------------------------|
| 1-501-161-00    | (C) Antenna, ribbon                     |
| 1-534-492-00    | Cord, antenna (E model)                 |
| 1-551-278-00    | Cord, speakers (E model)                |
| 3-701-630-00    | (A) Bag, polyethylene                   |
| 3-770-894-11    | (D) Manual, instruction (AEP, UK model) |
| 3-770-894-51    | Manual, instruction (E model)           |
| 3-794-615-51    | Leaflet (E model)                       |
| 4-858-078-00    | (B) Sheet, protection                   |
| 4-858-084-00    | (B) Cushion, upper                      |
| 4-858-085-00    | (B) Cushion (left), lower               |
| 4-858-086-00    | (B) Cushion (right), lower              |
| 4-859-912-00    | (A) Sheet, protection (for knobs)       |
| 4-859-923-00    | (E) Carton (UK, AEP; silver type)       |
| 4-859-925-00    | Carton (E model)                        |
| 4-859-927-00    | (E) Carton (black type)                 |

## ELECTROLYTIC CAPACITORS

Note: Circled letter (A to Z) are applicable to European models only.

| CAP. (μF) | RATING → : Use the high voltage rated one. |                  |                  |                  |                  |                  |
|-----------|--------------------------------------------|------------------|------------------|------------------|------------------|------------------|
|           | 6.3 VOLT.                                  | 10 VOLT.         | 16 VOLT.         | 25 VOLT.         | 35 VOLT.         | 50 VOLT.         |
|           | PART No.                                   | PART No.         | PART No.         | PART No.         | PART No.         | PART No.         |
| 0.47      |                                            |                  |                  |                  |                  | 1-121-726-00 (A) |
| 1.0       |                                            |                  |                  |                  |                  | 1-121-391-00 (A) |
| 2.2       |                                            |                  |                  |                  |                  | 1-121-450-00 (A) |
| 3.3       | →                                          | →                | →                | 1-121-392-00 (A) | →                | 1-121-393-00 (A) |
| 4.7       | →                                          | →                | →                | 1-121-395-00 (A) | →                | 1-121-396-00 (A) |
| 10        | →                                          | →                | 1-121-651-00 (A) | 1-121-398-00 (A) | →                | 1-121-738-00 (A) |
| 22        | →                                          | →                | 1-121-479-00 (A) | 1-121-480-00 (A) | 1-121-662-00 (A) | 1-121-152-00 (A) |
| 33        | →                                          | →                | 1-121-403-00 (A) | 1-121-404-00 (A) | 1-121-652-00 (B) | 1-121-405-00 (A) |
| 47        | →                                          | 1-121-352-00 (A) | 1-121-409-00 (A) | 1-121-410-00 (A) | 1-121-653-00 (B) | 1-121-411-00 (A) |
| 100       | →                                          | 1-121-414-00 (A) | 1-121-415-00 (A) | 1-121-416-00 (A) | 1-121-357-00 (B) | 1-121-417-00 (B) |
| 220       | 1-121-419-00 (B)                           | 1-121-420-00 (B) | 1-121-421-00 (A) | 1-121-422-00 (B) | 1-121-261-00 (C) | 1-121-423-00 (B) |
| 330       | 1-121-751-00 (B)                           | 1-121-805-00 (B) | 1-121-521-00 (C) | 1-121-654-00 (B) | 1-121-655-00 (D) | 1-121-656-00 (C) |
| 470       | 1-121-424-00 (B)                           | 1-121-425-00 (C) | 1-121-426-00 (C) | 1-121-733-00 (B) | 1-121-361-00 (E) | 1-121-810-00 (D) |
| 1000      | —                                          | 1-121-736-00 (C) | 1-121-245-00 (D) | 1-121-657-00 (D) | 1-121-388-00 (E) | 1-123-061-00 (F) |
| 2200      | 1-121-658-00 (B)                           | 1-121-659-00 (C) | 1-121-660-00 (D) | 1-123-067-00 (F) | 1-121-984-00 (F) | —                |
| 3300      | 1-121-661-00 (D)                           | 1-123-075-00 (E) | 1-123-071-00 (F) | —                | —                | —                |

| CAP. (μF) | 100 VOLT.        | 160 VOLT.        | 250 VOLT.        | 350 VOLT.        |
|-----------|------------------|------------------|------------------|------------------|
|           | PART No.         | PART No.         | PART No.         | PART No.         |
| 0.47      | —                | —                | —                | —                |
| 1.0       | 1-123-249-00 (A) | 1-123-252-00 (A) | 1-123-003-00 (B) | 1-121-168-00 (B) |
| 2.2       | 1-123-250-00 (A) | 1-123-026-00 (B) | —                | 1-123-028-00 (B) |
| 3.3       | 1-121-995-00 (A) | —                | 1-123-004-00 (B) | 1-123-006-00 (C) |
| 4.7       | 1-123-255-00 (A) | 1-121-246-00 (B) | 1-121-759-00 (B) | 1-123-007-00 (D) |
| 10        | 1-121-126-00 (B) | 1-121-999-00 (B) | 1-123-254-00 (C) | 1-123-008-00 (D) |
| 22        | 1-121-996-00 (C) | 1-123-253-00 (C) | 1-123-005-00 (D) | 1-123-022-00 (D) |
| 33        | 1-121-997-00 (C) | 1-121-757-00 (C) | —                | —                |
| 47        | 1-123-251-00 (C) | 1-121-919-00 (C) | —                | —                |
| 100       | 1-123-084-00 (E) | —                | —                | —                |

## CERAMIC CAPACITORS (A)

| RATING    |              |           |              |           |              |           |              |
|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|
| CAP. (pF) | 50 VOLT.     | CAP. (pF) | 50 VOLT.     | CAP. (pF) | 50 VOLT.     | CAP. (μF) | 50 VOLT.     |
|           | PART No.     |           | PART No.     |           | PART No.     |           | PART No.     |
| 0.5       | 1-101-837-00 | 22        | 1-102-959-00 | 150       | 1-101-361-00 | 0.001     | 1-102-074-00 |
| 0.75      | 1-101-586-00 | 24        | 1-102-960-00 | 160       | 1-101-367-00 | 0.0012    | 1-102-118-00 |
| 1.0       | 1-102-934-00 | 27        | 1-102-961-00 | 180       | 1-102-976-00 | 0.0015    | 1-102-119-00 |
| 1.5       | 1-101-576-00 | 30        | 1-102-962-00 | 200       | 1-102-977-00 | 0.0018    | 1-102-120-00 |
| 2.0       | 1-102-935-00 | 33        | 1-102-963-00 | 220       | 1-102-978-00 | 0.0022    | 1-102-121-00 |
| 3         | 1-102-936-00 | 36        | 1-102-964-00 | 240       | 1-102-979-00 | 0.0027    | 1-102-122-00 |
| 4         | 1-102-937-00 | 39        | 1-102-965-00 | 270       | 1-102-980-00 | 0.0033    | 1-102-123-00 |
| 5         | 1-102-942-00 | 43        | 1-102-966-00 | 300       | 1-102-981-00 | 0.0039    | 1-102-124-00 |
| 6         | 1-102-943-00 | 47        | 1-101-880-00 | 330       | 1-102-820-00 | 0.0047    | 1-102-125-00 |
| 7         | 1-102-944-00 | 51        | 1-101-882-00 | 360       | 1-102-821-00 | 0.0056    | 1-102-126-00 |
| 8         | 1-102-945-00 | 56        | 1-101-884-00 | 390       | 1-102-822-00 | 0.0068    | 1-102-127-00 |
| 9         | 1-102-946-00 | 62        | 1-101-886-00 | 430       | 1-102-823-00 | 0.0082    | 1-102-128-00 |
| 10        | 1-102-947-00 | 68        | 1-101-888-00 | 470       | 1-102-824-00 | 0.01      | 1-102-129-00 |
| 11        | 1-102-948-00 | 75        | 1-101-890-00 | 510       | 1-101-059-00 | 0.022     | 1-101-005-00 |
| 12        | 1-102-949-00 | 82        | 1-102-971-00 | 560       | 1-102-115-00 | 0.047     | 1-101-006-00 |
| 13        | 1-102-950-00 | 91        | 1-102-972-00 | 680       | 1-102-116-00 |           |              |
| 15        | 1-102-951-00 | 100       | 1-102-973-00 | 820       | 1-102-117-00 |           |              |
| 16        | 1-102-952-00 | 110       | 1-102-815-00 |           |              |           |              |
| 18        | 1-102-953-00 | 120       | 1-102-816-00 |           |              |           |              |
| 20        | 1-102-958-00 | 130       | 1-101-081-00 |           |              |           |              |

0.001μF = 1,000pF

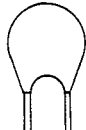
## CERAMIC (SEMICONDUCTOR) CAPACITORS (A)

| RATING → : Use the high voltage rated one. |              |              |           |              |              |
|--------------------------------------------|--------------|--------------|-----------|--------------|--------------|
| CAP. (μF)                                  | 25 VOLT.     | 50 VOLT.     | CAP. (μF) | 25 VOLT.     | 50 VOLT.     |
|                                            | PART No.     | PART No.     |           | PART No.     | PART No.     |
| 0.001                                      | →            | 1-161-039-00 | 0.018     | 1-161-016-00 | 1-161-054-00 |
| 0.0012                                     | →            | 1-161-040-00 | 0.022     | 1-161-017-00 | 1-161-055-00 |
| 0.0015                                     |              | 1-161-041-00 | 0.027     | 1-161-018-00 | 1-161-056-00 |
| 0.0018                                     |              | 1-161-042-00 | 0.033     | 1-161-019-00 | 1-161-057-00 |
| 0.0022                                     |              | 1-161-043-00 | 0.039     | 1-161-010-00 | 1-161-058-00 |
| 0.0027                                     | →            | 1-161-044-00 | 0.047     | 1-161-021-00 | 1-161-059-00 |
| 0.0033                                     | →            | 1-161-045-00 | 0.056     | →            | 1-161-060-00 |
| 0.0039                                     | →            | 1-161-046-00 | 0.068     | →            | 1-161-061-00 |
| 0.0047                                     | →            | 1-161-047-00 | 0.082     | 1-161-024-00 | 1-161-062-00 |
| 0.0056                                     | →            | 1-161-048-00 | 0.1       | 1-161-025-00 | 1-161-063-00 |
| 0.0068                                     | →            | 1-161-049-00 |           |              |              |
| 0.0082                                     | 1-161-012-00 | 1-161-050-00 |           |              |              |
| 0.01                                       | 1-161-013-00 | 1-161-051-00 |           |              |              |
| 0.012                                      | →            | 1-161-052-00 |           |              |              |
| 0.015                                      | 1-161-015-00 | 1-161-053-00 |           |              |              |

## MYLAR CAPACITORS (A)

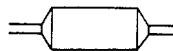
Note: Circled letters ((A) to (Z)) are applicable to European models only.

| RATING    |              |              |              |           |              |              |              |           |              |              |              |
|-----------|--------------|--------------|--------------|-----------|--------------|--------------|--------------|-----------|--------------|--------------|--------------|
| CAP. (μF) | 50 VOLT.     | 100 VOLT.    | 200 VOLT.    | CAP. (μF) | 50 VOLT.     | 100 VOLT.    | 200 VOLT.    | CAP. (μF) | 50 VOLT.     | 100 VOLT.    | 200 VOLT.    |
|           | PART No.     | PART No.     | PART No.     |           | PART No.     | PART No.     | PART No.     |           | PART No.     | PART No.     | PART No.     |
| 0.001     | 1-108-227-00 | 1-108-365-00 | 1-108-409-00 | 0.01      | 1-108-239-00 | 1-108-377-00 | 1-108-421-00 | 0.1       | 1-108-251-00 | 1-108-389-00 | 1-108-433-00 |
| 0.0012    | 1-108-351-00 | 1-108-366-00 | 1-108-410-00 | 0.012     | 1-108-357-00 | 1-108-378-00 | 1-108-422-00 | 0.12      | 1-108-363-00 | 1-108-390-00 | 1-108-434-00 |
| 0.0015    | 1-108-228-00 | 1-108-367-00 | 1-108-411-00 | 0.015     | 1-108-240-00 | 1-108-379-00 | 1-108-423-00 | 0.15      | 1-108-252-00 | 1-108-391-00 | 1-108-435-00 |
| 0.0018    | 1-108-352-00 | 1-108-368-00 | 1-108-412-00 | 0.018     | 1-108-358-00 | 1-108-380-00 | 1-108-424-00 | 0.18      | 1-108-364-00 | 1-108-392-00 | 1-108-436-00 |
| 0.0022    | 1-108-230-00 | 1-108-369-00 | 1-108-413-00 | 0.022     | 1-108-242-00 | 1-108-381-00 | 1-108-425-00 | 0.22      | 1-108-254-00 | 1-108-393-00 | 1-108-437-00 |
| 0.0027    | 1-108-353-00 | 1-108-370-00 | 1-108-414-00 | 0.027     | 1-108-359-00 | 1-108-382-00 | 1-108-426-00 | 0.27      | 1-108-854-00 | —            | —            |
| 0.0033    | 1-108-232-00 | 1-108-371-00 | 1-108-415-00 | 0.033     | 1-108-244-00 | 1-108-383-00 | 1-108-427-00 | 0.33      | 1-108-855-00 | —            | —            |
| 0.0039    | 1-108-354-00 | 1-108-372-00 | 1-108-416-00 | 0.039     | 1-108-360-00 | 1-108-384-00 | 1-108-428-00 | 0.39      | 1-108-856-00 | —            | —            |
| 0.0047    | 1-108-234-00 | 1-108-373-00 | 1-108-417-00 | 0.047     | 1-108-246-00 | 1-108-385-00 | 1-108-429-00 | 0.47      | 1-108-857-00 | —            | —            |
| 0.0056    | 1-108-355-00 | 1-108-374-00 | 1-108-418-00 | 0.056     | 1-108-361-00 | 1-108-386-00 | 1-108-430-00 |           |              |              |              |
| 0.0068    | 1-108-237-00 | 1-108-375-00 | 1-108-419-00 | 0.068     | 1-108-249-00 | 1-108-387-00 | 1-108-431-00 |           |              |              |              |
| 0.0082    | 1-108-356-00 | 1-108-376-00 | 1-108-420-00 | 0.082     | 1-108-362-00 | 1-108-388-00 | 1-108-432-00 |           |              |              |              |



## TANTALUM CAPACITORS

| RATING → Use the high voltage rated one. |                  |                  |                  |                  |                  |                  |                  |
|------------------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| CAP. (μF)                                | 3.15 VOLT.       | 6.3 VOLT.        | 10 VOLT.         | 16 VOLT.         | 20 VOLT.         | 25 VOLT.         | 35 VOLT.         |
|                                          | PART No.         | PART No.         | PART No.         | PART No.         | PART No.         | PART No.         | PART No.         |
| 0.01                                     |                  |                  |                  |                  | →                | →                | 1-131-396-00 (B) |
| 0.015                                    |                  |                  |                  |                  | →                | →                | 1-131-397-00 (B) |
| 0.022                                    |                  |                  |                  |                  | →                | →                | 1-131-398-00 (B) |
| 0.033                                    |                  |                  |                  |                  | →                | →                | 1-131-399-00 (B) |
| 0.047                                    |                  |                  |                  |                  | →                | →                | 1-131-400-00 (B) |
| 0.068                                    |                  |                  |                  |                  | →                | →                | 1-131-401-00 (B) |
| 0.1                                      |                  |                  |                  |                  | →                | →                | 1-131-402-00 (B) |
| 0.15                                     |                  |                  |                  |                  | →                | →                | 1-131-403-00 (B) |
| 0.22                                     |                  |                  |                  |                  | →                | →                | 1-131-404-00 (B) |
| 0.33                                     |                  |                  |                  |                  | →                | 1-131-409-00 (B) | 1-131-405-00 (B) |
| 0.47                                     | —                | —                | —                | —                | 1-131-412-00 (B) | →                | 1-131-406-00 (B) |
| 0.68                                     | —                | —                | —                | 1-131-415-00 (B) | →                | 1-131-410-00 (B) | 1-131-407-00 (B) |
| 1.0                                      | —                | —                | 1-131-418-00 (B) | —                | 1-131-413-00 (B) | →                | 1-131-408-00 (B) |
| 1.5                                      | —                | 1-131-421-00 (B) | —                | 1-131-416-00 (B) | →                | 1-131-411-00 (B) | 1-131-348-00 (B) |
| 2.2                                      | 1-131-424-00 (B) | —                | 1-131-419-00 (B) | —                | 1-131-414-00 (B) | 1-131-355-00 (B) | 1-131-349-00 (B) |
| 3.3                                      | —                | 1-131-422-00 (B) | —                | 1-131-417-00 (B) | 1-131-362-00 (B) | 1-131-356-00 (B) | 1-131-350-00 (B) |
| 4.7                                      | 1-131-425-00 (B) | —                | 1-131-420-00 (B) | 1-131-369-00 (B) | 1-131-363-00 (B) | 1-131-357-00 (B) | 1-131-351-00 (C) |
| 6.8                                      | —                | 1-131-423-00 (B) | 1-131-376-00 (B) | 1-131-370-00 (B) | 1-131-364-00 (B) | 1-131-358-00 (C) | 1-131-352-00 (C) |
| 10                                       | 1-131-426-00 (B) | 1-131-383-00 (B) | 1-131-377-00 (B) | 1-131-371-00 (B) | 1-131-365-00 (C) | 1-131-359-00 (C) | 1-131-353-00 (D) |
| 15                                       | 1-131-390-00 (B) | 1-131-384-00 (B) | 1-131-378-00 (B) | 1-131-372-00 (B) | 1-131-366-00 (C) | 1-131-360-00 (D) | —                |
| 22                                       | 1-131-391-00 (B) | 1-131-385-00 (B) | 1-131-379-00 (C) | 1-131-373-00 (C) | 1-131-367-00 (D) |                  |                  |
| 33                                       | 1-131-392-00 (B) | 1-131-386-00 (C) | 1-131-380-00 (C) | 1-131-374-00 (D) |                  |                  |                  |
| 47                                       | 1-131-393-00 (C) | 1-131-387-00 (C) | 1-131-381-00 (D) |                  |                  |                  |                  |
| 68                                       | 1-131-394-00 (B) | 1-131-388-00 (C) | —                | —                |                  |                  |                  |
| 100                                      | 1-131-395-00 (D) | —                | —                | —                |                  |                  |                  |



## TANTALUM CAPACITORS

| RATING    |                  |                  |                  |                  |                  |                  |
|-----------|------------------|------------------|------------------|------------------|------------------|------------------|
| CAP. (μF) | 3 VOLT.          | 6.3 VOLT.        | 10 VOLT.         | 16 VOLT.         | 20 VOLT.         | 35 VOLT.         |
|           | PART No.         | PART No.         | PART No.         | PART No.         | PART No.         | PART No.         |
| 0.033     |                  |                  |                  |                  |                  | 1-131-273-00 (E) |
| 0.047     |                  |                  |                  |                  |                  | 1-131-274-00 (E) |
| 0.068     |                  |                  |                  |                  |                  | 1-131-275-00 (E) |
| 0.1       |                  |                  |                  |                  |                  | 1-131-276-00 (D) |
| 0.15      |                  |                  |                  |                  |                  | 1-131-277-00 (D) |
| 0.22      |                  |                  | —                | —                | 1-131-262-00 (D) | 1-131-278-00 (D) |
| 0.33      |                  |                  | —                | —                | 1-131-263-00 (D) | 1-131-279-00 (D) |
| 0.47      |                  |                  | 1-131-169-00 (D) | —                | 1-131-264-00 (D) | 1-131-280-00 (D) |
| 0.68      |                  |                  | —                | 1-131-258-00 (D) | 1-131-265-00 (D) | 1-131-281-00 (D) |
| 1.0       |                  |                  | 1-131-254-00 (D) | —                | 1-131-266-00 (D) | 1-131-282-00 (D) |
| 1.5       |                  | 1-131-250-00 (D) | —                | —                | 1-131-267-00 (D) | 1-131-283-00 (E) |
| 2.2       |                  | —                | —                | 1-131-259-00 (D) | 1-131-268-00 (D) | 1-131-284-00 (E) |
| 3.3       |                  | —                | 1-131-255-00 (D) | —                | 1-131-269-00 (D) | —                |
| 4.7       |                  | 1-131-251-00 (E) | 1-131-171-00 (D) | —                | 1-131-270-00 (D) | —                |
| 6.8       |                  | —                | —                | 1-131-260-00 (D) | 1-131-271-00 (E) | —                |
| 10        | —                | —                | 1-131-256-00 (D) | —                | 1-131-272-00 (E) | —                |
| 15        | —                | 1-131-252-00 (D) | —                | 1-131-261-00 (E) |                  |                  |
| 22        | —                | —                | 1-131-257-00 (E) | —                |                  |                  |
| 33        | 1-131-176-00 (D) | 1-131-253-00 (E) | 1-131-173-00 (C) | —                |                  |                  |
| 47        | 1-131-288-00 (F) | 1-131-174-00 (D) | —                | —                |                  |                  |
| 100       | 1-131-177-00 (D) | —                | —                | —                |                  |                  |

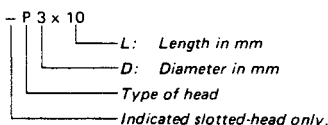
## 1/4 WATT CARBON RESISTORS <sup>Ⓐ</sup>

Note: Circled letter <sup>Ⓐ</sup> is applicable to European models only.

| Ω   | Part No.     | Ω  | Part No.     | Ω   | Part No.     | Ω    | Part No.     | Ω   | Part No.     | Ω    | Part No.     | Ω    | Part No.     |
|-----|--------------|----|--------------|-----|--------------|------|--------------|-----|--------------|------|--------------|------|--------------|
| 1.0 | 1-246-401-00 | 10 | 1-246-425-00 | 100 | 1-246-449-00 | 1.0k | 1-246-473-00 | 10k | 1-246-497-00 | 100k | 1-246-521-00 | 1.0M | 1-246-545-00 |
| 1.1 | 1-246-402-00 | 11 | 1-246-426-00 | 110 | 1-246-450-00 | 1.1k | 1-246-474-00 | 11k | 1-246-498-00 | 110k | 1-246-522-00 | 1.1M | 1-210-814-00 |
| 1.2 | 1-246-403-00 | 12 | 1-246-427-00 | 120 | 1-246-451-00 | 1.2k | 1-246-475-00 | 12k | 1-246-499-00 | 120k | 1-246-523-00 | 1.2M | 1-210-815-00 |
| 1.3 | 1-246-404-00 | 13 | 1-246-428-00 | 130 | 1-246-452-00 | 1.3k | 1-246-476-00 | 13k | 1-246-500-00 | 130k | 1-246-524-00 | 1.3M | 1-210-816-00 |
| 1.5 | 1-246-405-00 | 15 | 1-246-429-00 | 150 | 1-246-453-00 | 1.5k | 1-246-477-00 | 15k | 1-246-501-00 | 150k | 1-246-525-00 | 1.5M | 1-210-817-00 |
| 1.6 | 1-246-406-00 | 16 | 1-246-430-00 | 160 | 1-246-454-00 | 1.6k | 1-246-478-00 | 16k | 1-246-502-00 | 160k | 1-246-526-00 | 1.6M | 1-210-818-00 |
| 1.8 | 1-246-407-00 | 18 | 1-246-431-00 | 180 | 1-246-455-00 | 1.8k | 1-246-479-00 | 18k | 1-246-503-00 | 180k | 1-246-527-00 | 1.8M | 1-210-819-00 |
| 2.0 | 1-246-408-00 | 20 | 1-246-432-00 | 200 | 1-246-456-00 | 2.0k | 1-246-480-00 | 20k | 1-246-504-00 | 200k | 1-246-528-00 | 2.0M | 1-210-820-00 |
| 2.2 | 1-246-409-00 | 22 | 1-246-433-00 | 220 | 1-246-457-00 | 2.2k | 1-246-481-00 | 22k | 1-246-505-00 | 220k | 1-246-529-00 | 2.2M | 1-210-821-00 |
| 2.4 | 1-246-410-00 | 24 | 1-246-434-00 | 240 | 1-246-458-00 | 2.4k | 1-246-482-00 | 24k | 1-246-506-00 | 240k | 1-246-530-00 | 2.4M | 1-244-754-00 |
| 2.7 | 1-246-411-00 | 27 | 1-246-435-00 | 270 | 1-246-459-00 | 2.7k | 1-246-483-00 | 27k | 1-246-507-00 | 270k | 1-246-531-00 | 2.7M | 1-244-755-00 |
| 3.0 | 1-246-412-00 | 30 | 1-246-436-00 | 300 | 1-246-460-00 | 3.0k | 1-246-484-00 | 30k | 1-246-508-00 | 300k | 1-246-532-00 | 3.0M | 1-244-756-00 |
| 3.3 | 1-246-413-00 | 33 | 1-246-437-00 | 330 | 1-246-461-00 | 3.3k | 1-246-485-00 | 33k | 1-246-509-00 | 330k | 1-246-533-00 | 3.3M | 1-244-757-00 |
| 3.6 | 1-246-414-00 | 36 | 1-246-438-00 | 360 | 1-246-462-00 | 3.6k | 1-246-486-00 | 36k | 1-246-510-00 | 360k | 1-246-534-00 | 3.6M | 1-244-758-00 |
| 3.9 | 1-246-415-00 | 39 | 1-246-439-00 | 390 | 1-246-463-00 | 3.9k | 1-246-487-00 | 39k | 1-246-511-00 | 390k | 1-246-535-00 | 3.9M | 1-244-759-00 |
| 4.3 | 1-246-416-00 | 43 | 1-246-440-00 | 430 | 1-246-464-00 | 4.3k | 1-246-488-00 | 43k | 1-246-512-00 | 430k | 1-246-536-00 | 4.3M | 1-244-760-00 |
| 4.7 | 1-246-417-00 | 47 | 1-246-441-00 | 470 | 1-246-465-00 | 4.7k | 1-246-489-00 | 47k | 1-246-513-00 | 470k | 1-246-537-00 | 4.7M | 1-244-761-00 |
| 5.1 | 1-246-418-00 | 51 | 1-246-442-00 | 510 | 1-246-466-00 | 5.1k | 1-246-490-00 | 51k | 1-246-514-00 | 510k | 1-246-538-00 | 5.1M | 1-244-762-00 |
| 5.6 | 1-246-419-00 | 56 | 1-246-443-00 | 560 | 1-246-467-00 | 5.6k | 1-246-491-00 | 56k | 1-246-515-00 | 560k | 1-246-539-00 |      |              |
| 6.2 | 1-246-420-00 | 62 | 1-246-444-00 | 620 | 1-246-468-00 | 6.2k | 1-246-492-00 | 62k | 1-246-516-00 | 620k | 1-246-540-00 |      |              |
| 6.8 | 1-246-421-00 | 68 | 1-246-445-00 | 680 | 1-246-469-00 | 6.8k | 1-246-493-00 | 68k | 1-246-517-00 | 680k | 1-246-541-00 |      |              |
| 7.5 | 1-246-422-00 | 75 | 1-246-446-00 | 750 | 1-246-470-00 | 7.5k | 1-246-494-00 | 75k | 1-246-518-00 | 750k | 1-246-542-00 |      |              |
| 8.2 | 1-246-423-00 | 82 | 1-246-447-00 | 820 | 1-246-471-00 | 8.2k | 1-246-495-00 | 82k | 1-246-519-00 | 820k | 1-246-543-00 |      |              |
| 9.1 | 1-246-424-00 | 91 | 1-246-448-00 | 910 | 1-246-472-00 | 9.1k | 1-246-496-00 | 91k | 1-246-520-00 | 910k | 1-246-544-00 |      |              |

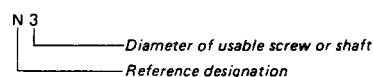
## HARDWARE NOMENCLATURE

Screw:



Unless otherwise indicated, it means cross-recessed head (Phillips type).

Nut, Washer, Retaining ring:



| Reference Designation | Shape | Description                                 | Remarks                                                            |
|-----------------------|-------|---------------------------------------------|--------------------------------------------------------------------|
| <b>SCREWS</b>         |       |                                             |                                                                    |
| P                     |       | pan-head screw                              | binding-head (B) screw for replacement                             |
| PWH                   |       | pan-head screw with washer face             | binding-head (B) screw and flat washer for replacement             |
| PS<br>PSP             |       | pan-head screw with spring washer           | binding-head (B) screw and spring washer for replacement           |
| PSW<br>PSPW           |       | pan-head screw with spring and flat washers | binding-head (B) screw and spring and flat washers for replacement |
| R                     |       | round-head screw                            | binding-head (B) screw for replacement                             |
| K                     |       | flat-countersunk-head screw                 |                                                                    |
| RK                    |       | oval-countersunk-head screw                 |                                                                    |
| B                     |       | binding-head screw                          |                                                                    |
| T                     |       | truss-head screw                            | binding-head (B) screw for replacement                             |
| F                     |       | flat-fillister-head screw                   |                                                                    |
| RF                    |       | fillister-head screw                        |                                                                    |
| BV                    |       | brazer-head screw                           |                                                                    |

| Reference Designation      | Shape | Description                                    | Remarks                                                                 |
|----------------------------|-------|------------------------------------------------|-------------------------------------------------------------------------|
| <b>SELF-TAPPING SCREWS</b> |       |                                                |                                                                         |
| TA                         |       | self-tapping screw                             | ex: TA, P 3 x 10                                                        |
| PTP                        |       | pan-head self-tapping screw                    | binding-head self-tapping (TA, B) screw for replacement                 |
| PTPWH                      |       | pan-head self-tapping screw with washer face   | binding-head self-tapping (TA, B) screw and flat washer for replacement |
| PTTWH                      |       | pan-head thread-rolling screw with washer face | binding-head (B) screw and flat washer for replacement                  |
| <b>SET SCREWS</b>          |       |                                                |                                                                         |
| SC                         |       | set screw                                      |                                                                         |
| SC                         |       | hexagon-socket set screw                       | ex: SC 2.6 x 4, hexagon socket                                          |
| <b>NUT</b>                 |       |                                                |                                                                         |
| N                          |       | nut                                            |                                                                         |
| <b>WASHERS</b>             |       |                                                |                                                                         |
| W                          |       | flat washer                                    |                                                                         |
| SW                         |       | spring washer                                  |                                                                         |
| LW                         |       | internal-tooth lock washer                     | ex: LW3, internal                                                       |
| LW                         |       | external-tooth lock washer                     | ex: LW3, external                                                       |
| <b>RETAINING RINGS</b>     |       |                                                |                                                                         |
| E                          |       | retaining ring                                 |                                                                         |
| G                          |       | grip-type retaining ring                       |                                                                         |

Sony Corporation

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